ÅKE BJERSTEDT

# INTERPRETATIONS
# OF
# SOCIOMETRIC CHOICE STATUS

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# INTERPRETATIONS
# OF
# SOCIOMETRIC CHOICE STATUS

STUDIES OF WORKMATE CHOICES IN THE SCHOOL CLASS AND SELECTED CORRELATES — WITH SPECIAL EMPHASIS ON THE METHODOLOGY OF PREFERENTIAL SOCIOMETRY

BY

*ÅKE BJERSTEDT*

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# PREFACE

Some years ago my teacher of psychology, Professor H. Siegvald, awakened my interest in the methods of preferential sociometry and in the possibility of utilizing them among schoolchildren for achieving a better understanding of certain social aspects of group work education. Preliminary reading and pivotal studies made it gradually clear to me that before proceeding further into this field, I should attempt to clarify certain central problems of methodology and data interpretation. The present investigations focus on some of these basic problems.

During every stage of my work, Professor Siegvald has shown an enthusiastic and encouraging interest and offered many fresh ideas and helpful suggestions.

Professor C.-E. Quensel and Fil. lic. G. Kulldorff have given valuable advice concerning certain statistical problems.

Docent G. Smith, Lektor I. Johannesson, Fil. lic. R. Johansson, and Fil. kand. B. Sjöman have contributed with constructive criticism of the manuscript, and Fil. kand. A. Ekdahl has helped me unsparingly with many statistical analyses.

The superintendents and the teachers in the schools where my investigations were made, have been very obliging and helpful. I especially want to mention Fil. lic. V. Sterner who facilitated my rather comprehensive testing programme in the Björkhagen school in many ways.

Miss M. Lindgren and Mrs. D. Nash have assisted with proof-reading, and Mrs. Nash has, in addition, examined my English text from a linguistic point of view. Ingenjör Mr. T. Magnusson has prepared the final drawings for the clichés. Fil. kand. S. Envik has helped me with the references. Several people have assisted me in doing various kinds of time-consuming clerical work; I especially want to mention Mrs. A. Kihlberg, Mrs. I. Luttergård, Miss E. Ternblad, and Mr. H. Raquette.

Without all these kind and skilful helpers it would not have been possible to present the results of my investigations at this time, and I am very grateful to all of them.

The investigations were supported by grants from Magnus Bergvalls Stiftelse, Statens Samhälls- och Rättsvetenskapliga Forskningsråd, Statens Psykologisk-Pedagogiska Institut, Folkskoleinspektör Lars Hofstedts Fond, and Stiftelsen Natur och Kultur. I wish to express my gratitude for this valuable aid.

Lund, April 1956.

*Å. B.*

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# INTRODUCTION: PROBLEM AND GENERAL DESIGN OF THE STUDY

"Sociometric" methods of investigating how an individual is evaluated by his peers are being used increasingly in a great variety of situations: they have been frequently applied in educational, industrial, and military spheres, to mention only a few, during recent years. The most usual procedure has, as we all know, an attractive — and deceptive — simplicity: the subject is required to show his willingness to interact with certain individuals as well as his unwillingness to interact with certain other individuals. A simple measure of sociometric choice status is then obtained by adding together the number of votes an individual receives from the members of the group, after which it is possible to distinguish the relatively superselected (overchosen) and the relatively subselected (underchosen) from the more normally selected individuals. So far the procedure is straight-forward and only few fallacies are involved. However, this measure has been used in a variety of ways with different degrees of interpretation. Broadly speaking, we may identify two main uses: (a) a more *restricted* (or *testproximal*) use, and (b) a more *interpretative* (or *testdistal*) use. In the former type the measure is regarded only as a summary of incoming preferences without much interpretation being added; the status of being subselected or superselected in a specific choice situation may then be compared with other individual data. In the latter type, which is perhaps more frequent, the measure of sociometric choice status is given one or several extra-operational interpretations, i. e., a translation is made to a more general language, more distant from the *here and now* of the specific preference situation. One or several assumptions are then made concerning the choice status score — often tacitly and without clear awareness of their existence.

In this introductory section only a few examples of such usual — more or less implicit — assumptions will be given. It is very often held, for instance, that the overchosen individual is not only overaccepted in the specific choice situation from which the status score was derived, but also that he would retain his relative position if we used slightly different preference methods or different choice aspects or different testing times.

Moreover, sometimes the state of being overchosen is thought of as combined with awareness of the fact of acceptance: accepted individuals are then expected to *feel* accepted. Furthermore, overacceptance is thought to be combined with good "adjustment" and "efficiency" in general: having high choice status is regarded as desirable, having low choice status as undesirable. The use of the measure in different countries in its broad interpretative meaning presupposes intercultural similarity. — In order to give the examples mentioned a more explicit expression, we may summarize them in a few clauses. Briefly then, the sociometric choice status scores are often assumed to be:

(a) relatively *unaffected by preference method*;
(b) relatively *unaffected by choice aspect* (criterion);
(c) relatively *constant over a period of time*;
(d) accompanied by the individual's *awareness* of his own relative sociometric situation;
(e) *correlated with* measures of general "*adjustment*" and "*efficiency*" of the individual; and
(f) possible to *interpret similarly in different countries.*

In very general terms, the purpose of the present studies may be expressed in the following way. The author intends to discuss and test a series of common interpretative assumptions concerning sociometric choice status — such as those mentioned above — starting from the field of application where sociometric choice methods have probably been most easily utilized (elementary school), from a choice aspect of primary importance for its educational applications (selecting a workmate), and from a simple choice technique similar to the most generally employed devices.[1]

The overall plan for this report will be as follows. In the *first part* general principles for collection and analysis of sociopreferential data are discussed.[2] The investigations to be reported subsequently may be said to consist of two different, but closely connected parts: (a) The "*Alfa*

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[1] We deliberately avoid more sophisticated scaling methods, since our primary aim is to see whether commonly assumed interpretations are meaningful for those very choice situations and those very choice techniques that are most usually employed.

[2] Since the need for systematic methodological discussion is great within several areas of this field, we have found it best when dealing with certain issues to carry our discussion further than is absolutely necessary for the present empirical investigations, a fact which we have thought it right to indicate in the sub-title. Thus, the first part may also — without too great inconvenience, we hope — be read separately by individuals interested in the methodology of sociopreferential research.

*Experiments*", sociopreferential investigations of 867 children divided into 30 classes (5 classes representing each of the six age levels 9—14 years). (b) The "*Beta Experiments*", extra-sociopreferential investigations of about 140 individuals with extreme sociopreferential positions (superselected *v.* superrejected) chosen with the aid of techniques used in the Alfa Experiments. Of course, no definite sharp limits can be drawn between these two sub-projects. However, for convenience, the division just mentioned is also followed in the plan of the report. Thus, the Alfa Experiments are described in the *second part*, and the Beta Experiments in the *third part.*

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FIRST PART:

# DISCUSSION OF GENERAL PRINCIPLES FOR COLLECTION AND ANALYSIS OF SOCIOPREFERENTIAL DATA

Chap. 1. Introductory discussion on the definition and delimitation of sociometry

Chap. 2. General principles for collection of sociopreferential data by means of subject report methods

Chap. 3. General principles for analysis of sociopreferential data disclosed by means of subject report methods

## CHAPTER 1

# INTRODUCTORY DISCUSSION ON THE DEFINITION AND DELIMITATION OF SOCIOMETRY

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## I. ORIGINS OF "SOCIOMETRY"

"Sociometry" as we know it to-day is intimately associated with J. L. Moreno, with his pioneering book "*Who Shall Survive*?" published in 1934, and with the journal "*Sociometry*", founded by him in 1937. It is obvious by now that neither the terms "sociometry" and "sociogram" nor the primary techniques of using social choice situations for a study of interpersonal preferences nor the secondary technique of diagrammatically depicturing social relations can be credited *exclusively* to Moreno. A study of works such as, for instance, Terman (1904), Bernfeld (1922), Reininger (1924, 1932), Hetzer (1926), Večerka (1926), Lochner (1927), Maller (1929), Cattell (1934a), and Koskenniemi (1936) shows us independent workers who have given certain contributions in the same general direction.[1] Nevertheless it does not seem unfair to link the methodological developments mentioned primarily with the name of MORENO. His work was a highly original contribution with a richness of methodological innovation and important empirical demonstrations of the practical significance of his approach. Moreover, MORENO was an expansive and persuasive person, intensely convinced of the importance of his ideas. He was not only a "cold" research worker, he was also a revolutionary, a prophet, a poet, and a business man. He was therefore the man who could get attention — cultish disciples as well as enraged critics — and, as to-day the mist of secterianism begins to drift away, we find "sociometric" measures fairly widely used by social psychologists and sociologists all over the world. Several research workers would now subscribe to MORENO's own statement: "There is no controversy about my ideas . . . I am the controversy." (1953, p. cviii).

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* The numbers refer to pages.

[1] According to the second edition of "*Who Shall Survive*?" the term "sociometry" was coined by Moreno himself (1953, p. 724) and used as early as 1916 (*ibid.*, p. ii), although it plays no role in his works before 1934. — In fact, however, the *term* was used as early as the seventeenth century and — later — by the French sociologist

## II. THE FIELD OF SOCIOMETRY: A GENERAL DELIMITATION

In the introduction, several terms were used preliminarily at a rather low level of precision. As we proceed, we have to reconsider and redefine some of them more accurately. Of primary importance is, of course, the meaning of "sociometry". As everybody who has read so-called sociometric articles knows, the current terminology is far from uniform. When we deal with delimitations of scientific fields of study, we may proceed in at least three different ways: we may consider (a) what the term *ought* to mean according to its etymology; (b) what kind of definition is recommended by people identifying themselves as workers in the field of study; or (c) what kind of work is done by those workers. Without going into lengthy detail, certain considerations will be made in this chapter from each of these points of view; the main stress will be laid on the second one.

Etymologically "sociometry" is composed of the words "*socius*" and "*metrum*", giving us the meaning: "socius measurement". However, this fact does not solve our problem of delimitation, since the meaning of "companion measurement" is rather vague, while the looser translation "social measurement" is even worse. The linguistic analogy with the term-couple psychometry-psychology seems helpful at first glance (psycho-

ADOLPHE COSTE (SOROKIN 1943). MORENO's objection (1943, p. 317) that COSTE did not use the modern form of the word seems wrong (COSTE 1899, p. 160). However, COSTE used the term with a rather special demographic meaning, which is rather different from the most frequent present usage. In this century the term was used early by STEINMETZ (1913).

metry = psychological measurement, sociometry = sociological measurement), but two facts limit the usefulness of this comparison: the relation of psychometry to psychology is by no means uniformly established (as a dictionary will demonstrate), and the meaning of sociological measurement is then dependent on the delimitation of sociology, which still remains a difficult task. To this we may add the fact that the word sociology has sometimes been considered to be an etymologically inappropriate word for the field of work conventionally labelled with this term (cf. BAIN 1943).

## 1. Different Definitions: A Survey

The term "sociometry" is defined in different ways by different authors and is used also by MORENO himself with changing connotations. A review of MORENO's collected papers (1951) had the title "The sociometries of Dr. Moreno" (MEYER 1952). Among others, the following usages may be distinguished:

*Definition A*: As a designation of every kind of *quantitative human sociology and social psychology* ("social measurement") the term is used by, e. g., CHAPIN (1940, 1943, 1947), BAIN (1943), LUNDBERG (1943), SANDERSON (1943), SLETTO (1947), and GEIGER (1950). Sometimes MORENO approaches this broad kind of definition (1943, 1955).

*Definition B*: As a designation of quantitative treatment of every kind of *interhuman relations*. Whilst MORENO once reproached CHAPIN for making sociometry superficial by identifying it as social measurement in general (MORENO 1948, p. 156), thereby repudiating the broadest interpretation (def. *A*), he has clearly subscribed to definition *B* in the following quotation: "Sociometry means measurement of social relations, in its broadest sense, *all* measurement of *all* social relations" (MORENO 1951, p. 7). Similar definitions are given by ENGELMAYER ("Soziometrie ... ist ein messendes und darstellendes Verfahren zur Erfassung der innergrupplichen (zwischenmenschlichen) Beziehungen der Verbände"; 1952, p. 5), WARD ("Sociometry is a method of mapping existent interpersonal relationships"; 1955, p. 66), and others. The difference between this kind of definition and the one used by CHAPIN, for instance, has not always been recognized, but has been clearly pointed out by DODD (1943, 1948). Whereas sociology may be said to study collective human phenomena, including interhuman ones, sociometry, according to def. *B* and DODD, studies the latter only. If the term "plurel" is used for a category of individuals having at least one common characteristic and the term "group" is used for a plurel of interrelated individuals, we may express this distinction thus: sociology studies plurels including groups, sociometry studies only groups. According to this definition, investigations of a demographic character such as those of COSTE do *not* belong to sociometry (cf. MORENO 1943, p. 317—318).

*Definition C*: As a designation of quantitative treatment of *certain types of interhuman relations only*: what we could call "*preferential*" *relations*, i. e., relations that it is possible to describe in terms of "attraction-rejection-neutrality" with respect to a choice situation. Now we deal primarily with situations in which the individual has to show his willingness to interact with certain individuals as well as his unwillingness to interact with certain other individuals. This focusing on preferential relations is very clear in BRONFENBRENNER's definition: "Sociometry is a method for discovering, describing, and evaluating social status, structure, and development through measuring the extent of acceptance or rejection between individuals in groups" (1943, p. 364). That preferential relations are of primary interest to MORENO is clear: "According to Sociometry, social systems are attraction-repulsion-neutrality systems" (1953, p. 55; cf. handbook definitions, such as those of NEWCOMB 1952, p. 506, or KLINEBERG 1954, p. 458). It is, however, according to MORENO, a misunderstanding that attraction and rejection, as defined by "sociometrists", is exclusively private and emotional, centering around the liking — disliking dichotomy only. The terms are functionally and operationally used with reference to a specific choice situation (*ibid.*, p. 697).[2]

*Definition D*: As a designation of quantitative treatment of *interhuman relations* disclosed by means of *one* general type of method only, viz. the *subject report method* (excluding pure interaction observations, for example). CATTELL & STICE in one place use the term "sociometric" to "comprehend any scores based on reports by one group member about another" (1953, p. 7).

*Definition E*: As a designation of quantitative treatment of *preferential interhuman relations*, disclosed by means of one general type of method only, viz. the *subject report method*. The focus is now on the subject's own report of "attraction-repulsion-neutrality" with respect to a choice situation. Whilst definition *C* meant a restricting of the field of sociometry by the research object (excluding non-preferential relations), and definition *D* meant a methodological restricting (excluding interaction experiments, for instance), definition *E* includes both these restrictions simultaneously. According to one definition by CATTELL & STICE (1953, p. 96; cf. a different definition above) sociometric measures give "evidence of ergic needs in terms of *attitudes* to other individuals, *introspectively determined* i. e. not from actual group interaction process" (italics rearranged by the present writer in order to emphasize the point here).[3] They clearly stress these two restrictions, by saying that according to this definition sociometric data are "(a) subjective and (b) concerned with desired affiliations or rejections" (ibid.).

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[2] Thus, even if we consider definition *C* appropriate, the reductional view, that analysis of preferential relations is *sufficient* in order for one to understand society, would still not be rightly termed "sociometry" (but could perhaps be called "*sociometrism*").

*Definition F*: As a designation of quantitative treatment of *preferential interhuman relations* disclosed by means of a *fixed subject report method* ("*sociometric test proper*"), in which, for instance, a specific choice aspect (*criterion*) is important (excluding friend choices and nonspecified attraction reports), and the subjects are promised that their choices will be *utilized* in reconstructing the group (excluding hypothetical choice situations). Those who do not follow these norms (cf. further details below, chap. 2), are then said to use non-sociometric or — at the best — "near-sociometric" methods (cf., e. g., MORENO 1937 b, p. 210; SMUCKER 1949, p. 326; POLANSKY, LIPPITT, & REDL 1950, p. 49). A representative quotation may be cited: "a sociometric test is not *sociometric* unless the criterion involved exists for the subjects and the 'tested' individuals believe results not only can but *will* be utilized for the criterion on which they have expressed themselves" (JENNINGS 1950, p. 28).

*Definition G*: As a designation of quantitative treatment of *preferential interhuman relations* disclosed by means of the "*sociometric test proper*" (as in def. *F*) and *depicted by use of sociograms* (some kind of arrow diagram for visualizing choice directions; cf. chap. 3 below). This conception of sociometry is usual in popular treatments; the sociogram was the most conspicuous characteristic of MORENO's sociometry from its very start (cf. 1953, p. xiii).

*Definition H*: As a designation of every kind of *quantitative human and animal sociology and social psychology* (definition *A* + animals). If we wish to include animal studies within sociometry — and this has

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[3] The characteristic of "preferentiality" is, of course, implied in the word "attitudes"; in discussion of attitudes it is usually stressed that they can be designated as either "pro" or "anti" (cf., e. g., KRECH & CRUTCHFIELD 1948, p. 151 et seq.; cf., also, the discussion of the related terms "attitude", "interest", "value", "valence", and "cathexis" by KLUCKHOHN & MURRAY 1953, p. 11, 21. The more general, extensive discussion of the concept of "attitude" will not be dealt with here. For a general survey we may refer to GREEN 1954, and for criticism of certain interpretations often connected with the empirical measurements to MARC-WOGAU 1939, p. 38 et seq.).

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sometimes been done (cf., e. g., MORENO 1945: "The two sociometries, human and subhuman", and different articles in the symposium, *Sociometry*, 1945, Vol. 8, Number 1) — definitions *A*, *B*, and *C* may be modified so as to include animal phenomena, whereas definitions *D*—*G* (in which subject report methods are used) cannot be used to include animal studies.

*Definition I*: As a designation of quantitative treatment of every kind of *interhuman and interanimal relations* (definition *B* + animals).

*Definition J*: As a designation of quantitative treatment of *preferential interhuman and interanimal relations* (definition *C* + animals).

*Definition K*: As a designation of quantitative treatment of *preferential interrelations not only between organisms* (person-to-person, animal-to-animal, person-to-animal, animal-to-person) *but also between organisms and things* (person-to-thing, animal-to-thing; cf. MORENO 1947 b, p. 290).

*Definition L*: As a designation of a *school of thought* rather than a distinct branch, centering around J. L. MORENO's thinking and concepts such as "spontaneity", "creativity", "sociometric revolution", etc., including everything MORENO has been associated with (even psychodrama, for instance). "Things are held in cohesion by his personality", says MURPHY (1943, p. 221).

*Definition M*: As a designation for all *work labelled sociometry by those who do it* (cf., e. g., QUEEN 1943, NEHNEVAJSA 1955).

## 2. Different Definitions: An Expert Vote

### A. *Collection of data*

"'When I use a word', Humpty Dumpty said in a rather scornful tone, 'it means just what I choose it to mean — neither more nor less'." This quotation from "*Through the Looking-Glass*" seems appropriate for much operationistic discussion. However, certain problems of definition seem to need a less individualistic approach in order not to block scientific intercommunication. In some cases an expert vote may be of use.

The thirteen definitions discussed above were sent to 269 "experts" for consideration. Among these, most (over 200) had published at least one article in "*Sociometry*" 1945—1955, and the rest were social psychologists well-known from related fields (the authors most often found in "*Human Relations*" 1950—1954; the authors most cited in CARTWRIGHT & ZANDER

(Eds.), "*Group Dynamics*"; and the authors most cited in LINDZEY (Ed.), "*Handbook of Social Psychology*").[4]

The material sent to them consisted of a three-page "manual" and an answer card.

Page one of the "manual" gave the following general introduction:

> Many widely differing definitions of sociometry have been given. To a certain extent this has been natural and even advantageous in a new and quickly expanding field. However, sociometry has come of age, and, in order to avoid confusion in scientific communication, the question of definition and delimitation deserves to be discussed. *On page two we give a series of definitions* — used earlier in this or similar form by one or more authors (in order to avoid prestige suggestions we do not quote references).
>
> We should be very glad if you would be kind enough to *fill in the answer card giving your opinion on these definitions.* (In order to simplify your assessment a classifying scheme and figures are enclosed as page three.) Your vote is important, since you have made significant contributions to sociometry or related fields yourself. — In order to give you a further extra-scientific motivation, we have determined to give the *new international journal of sociometry one year free* to one of those who answer within two weeks (decided by lottery). You will be informed of the voting result.
>
> *N. B.* You need only answer question 1, but of course we would appreciate whatever points of view you have and might give on the card or in letter form.
>
> DO NOT FORGET TO PUT YOUR NAME ON THE ANSWER CARD! POSTAGE IS ALREADY PAID.
>
> THANK YOU FOR YOUR CO-OPERATION!
>
> Åke Bjerstedt

Page two of the "manual" had the following text:

> DIFFERENT DEFINITIONS OF SOCIOMETRY
>
> The term "SOCIOMETRY" may be used as a designation of:
>
> A. Every kind of *quantitative human sociology and social psychology.*
>
> B. Quantitative treatment of every kind of *interhuman relations.* (Then sociology may be said to study collective human phenomena, including interhuman ones, whereas sociometry, so defined, studies the latter only.)

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[4] The exact composition of the "expert sample" was as follows: 218 authors from "*Sociometry*" (199 with articles 1945—54; 11 with articles in 1955: 1—3; 8 with articles in the Symposion on sociometry in 1943: 3); 12 authors from "*Human Relations*" 1950—1954 (those with two articles or more), the 5 authors most cited in "*Group Dynamics*", the 22 authors most cited in the "*Handbook*", and, finally, 12 selected among others prominent in this field, but not included in the other categories. — In total, 233 of the investigators were from the U. S. A. and 36 from other countries.

C. Quantitative treatment of *"preferential" interhuman relations* (i. e., relations possible to describe in terms of attraction-rejection-neutrality with respect to a choice situation).

D. Quantitative treatment of *interhuman relations* disclosed by means of the *subject report method* (excluding pure interaction observations, for example).

E. Quantitative treatment of *"preferential" interhuman relations* disclosed by means of the *subject report method.* (The focus is on the subject's own report of attraction-repulsion-neutrality with respect to a choice situation).

F. Quantitative treatment of *"preferential" interhuman relations* disclosed by means of a *fixed subject report method* (*"sociometric test proper"*), in which for instance a specific choice aspect (*criterion*) is important (excluding friend choices and non-specified attraction reports) and the subjects are promised that their choices will be *utilized* in reconstructing the group (excluding hypothetical choice situations).

G. Quantitative treatment of *"preferential" interhuman relations* disclosed by means of the *"sociometric test proper"* (as in *F*) and *depicted by use of sociograms* (some kind of arrow diagram for visualizing choice directions).

H. Every kind of *quantitative human and animal sociology and social psychology* (definition *A* + animals).

I. Quantitative treatment of every kind of *interhuman and interanimal relations* (definition *B* + animals).

J. Quantitative treatment of *"preferential" interhuman and interanimal relations* (definition *C* + animals).

K. Quantitative treatment of *"preferential" interrelations not only between organisms* (person-to-person, animal-to-animal, person-to-animal, animal-to-person) *but also between organisms and things* (person-to-thing, animal-to-thing).

L. A *school of thought* rather than a distinct branch, *centering around J. L. Moreno's thinking* and concepts such as "spontaneity", "creativity", "sociometric revolution" etc., including everything Moreno has been associated with (even psychodrama, for instance).

M. All *work labelled sociometry by those who do it.*

Table 1.1. Cross-Classifying Scheme for Definitions *A-J*

| *Research object:* | *Research method:* | | | |
|---|---|---|---|---|
| | Different methods (interaction observation included) | Subject report only | One type of subject report only ("sociometric test proper") | |
| | | | a) irrespective of data analysis | b) data analysis considered |
| *Human phenomena only:* | | | | |
| Collective phenomena | A | — | — | — |
| Interrelations | B | D | — | — |
| "Preferential" interrelations | C | E | F | G |
| *Human and animal phenomena:* | | | | |
| Collective phenomena | H | — | — | — |
| Interrelations | I | — | — | — |
| "Preferential" interrelations | J | — | — | — |

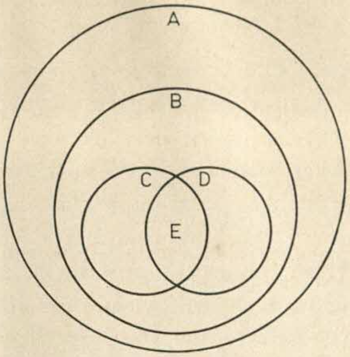

Fig. 1.1. Interrelations of definitions *A—E*.

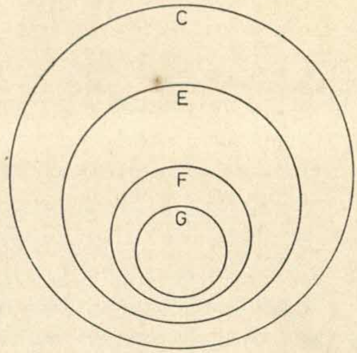

Fig. 1.2. Interrelations of the four preferential definitions *C*, *E*, *F*, and *G*.

Page three of the "manual" presented the cross-classifying scheme shown in Table 1.1 and the diagrammatic representations given in Figure 1.1 and Figure 1.2.[5] These aids were designed to illustrate the interrelations between certain of the definitions in a way that could be more easily grasped than could the enumeration on page two.

The answer card had the following text:

1. Which definition do you consider best?
   (Encircle the corresponding letter):

   *A B C D E F G H I J K L M*
2. Why? ..............................................................................................
   ..............................................................................................
3. Are other definitions above possible? If so, give their letters in order of preference: ..............................................................................................
4. If you consider a definition other than *A—M* (old or new) worth mentioning, write it here:

   ..............................................................................................
   ..............................................................................................
   ..............................................................................................
5. How do you evaluate this last definition? Is it superior, equivalent, inferior to the one chosen under 1. (Underline expression desired.)

..............................................................................................
Sender's name (block letters)

---

[5] For the sake of easy reference, the numbering of the tables indicates the chapter and the number of the table within that chapter. Thus, Table 1.1 is the first table of chapter 1. Similarly, Figure 6.2 is the second diagram of chapter 6, etc.

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### B. *Preliminary analysis of results*

The number of possible answers was 262.[6] The present analysis deals with a 50 % sample, *viz.* with the 131 answer cards first returned.[7] Because of the increasing interval between the arrival of the cards, it was felt that any answers which might arrive later were not likely to change the general results. The selection principle probably operating in most cases is favorable rather than unfavorable to our general aim, since it seems likely that answers were chiefly received from those genuinely interested in the terminological problem on hand and those who have a clear idea of their own preferences with respect to the different definitions.

#### a. *The definitions most preferred*

Figure 1.3 gives a general picture of which definitions were most preferred. Above the central line the frequency of "first choices" are given (answers to question 1 on the answer card), each choice being symbolized by a capital letter. Below the line "lower-level preferences" are given (answers to question 3 on the answer card), each mention being symbolized by a small letter.

The first interesting finding is that all the thirteen definitions given in the questionnaire have received at least some votes; they have even been "first choices": none has therefore been regarded as quite inadequate. This fact testifies to the existing terminological confusion and demonstrates the need for clarification.

Nevertheless, there are clear differences between the various definitions. Definitions *D*, *G*, *K*, and *M* receive very few first choices (3—4). Definitions *A*, *E*, *F*, *H*, *I*, *J*, and *L* receive a greater number (7—12), but the most preferred are clearly definition *C* with 28 first choices and definition *B* with 24. The lower-level preferences give a somewhat different picture, but definition *C* also receives most votes here. If first choices are given a weight of 1.0, and all other choices a weight of 0.5, the final preference rank would be as follows: *C*; *B*; *E*, *F*; *D*; *L*; *G*; *A*, *J*; *H*, *I*, *M*; *K* (definitions separated by comma instead of semicolon have the same rank).

---

[6] Of the 269 questionnaires dispatched, 7 were returned because of unknown address or death.

[7] In this connection we will only give a brief description of the main results. Any reader especially interested in the problem of definition is referred to a separate article to be published later.

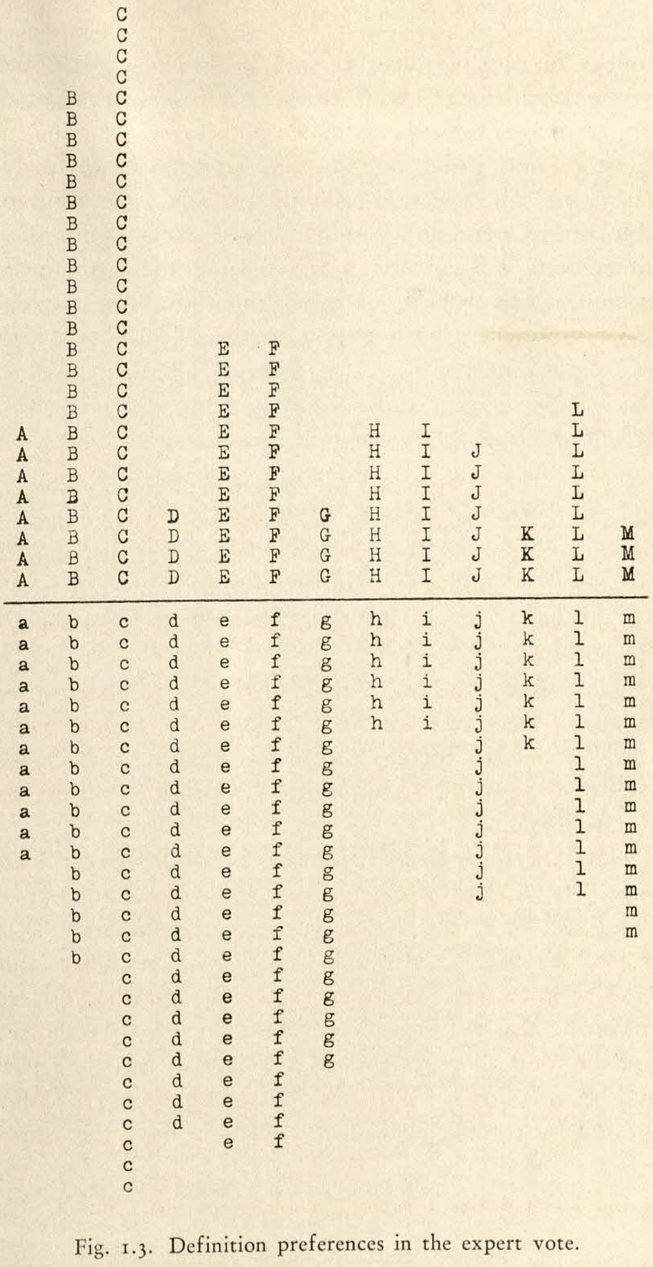

Fig. 1.3. Definition preferences in the expert vote.

### b. *Reasons given for first choices*

The definitions may be grouped in three main categories: (a) definitions *A—G*, dealing with human phenomena only; (b) definitions *H—K*, dealing with both human and subhuman phenomena; and (c) definitions *L* and *M* with a more indefinite scope. Definitions *A—G* are, as a rule, arranged starting with those of a relatively wide range and progressing to those of a relatively narrow one.

In certain respects, *L* and *M* are less satisfactory than the others because of their indeterminate scope: they are substitutes for definitions rather than real definitions. But in a vaguely structured field, the very lack of precision may have a certain usefulness as being a realistic mirror of actual usage while avoiding premature limitations. Thus, the choice of *M* is defended on the grounds that it permits inclusion of new activities, and that it is too early to chrystallize a more restrictive definition in this rapidly growing, active area (M. MEAD, J. NEHNEVAJSA, R. L. SOLOMON). Some individuals who chose *L* point to the fact that MORENO's work is closely associated with the term (e. g., E. L. HARTLEY, F. ZNANIECKI). F. S. CHAPIN finds *L* "most truthful and realistic", and R. R. BLAKE chooses *L* while considering the field "too confused for any precise definition at this time".

Definitions *H—K* were often chosen because of their middle position between the indeterminate definitions on the one hand and the more restrictive definitions *A—G* on the other. E. HÖHN stresses that animal relations ought to be included, since "the origins of sociometry are in animal psychology (SCHJELDERUP-EBBE)". R. F. BALES chooses *I*, which represents his "guess as to how the meaning of the term will gravitate in time". U. G. FOA, making the same choice, points out that the definition should "define a phenomenological area rather than the method of observation or the population concerned", and D. T. CAMPBELL gives a similar motivation, stressing that definition *I* is "not *more* specific than the etymology justifies".

Wide definitions, even if they do not include sub-human phenomena, appeal to several research workers. R. B. CATTELL chooses *A* on the grounds that the words mean "measurement of social phenomena" and because of the analogy with "psychometrics". V. CERVINKA finds "no reason for limiting it to less", and S. A. QUEEN says emphatically that *A* (or *H*) is "the only sensible use of the term". C. P. LOOMIS recommends a constant use of *A*, qualifying it for other restricted meanings.

Whereas the broadness of *H—K* and *A* make them attractive to several investigators, others find that the very specificity of *F* and *G* render these definitions especially useful. K. W. BACK, for example, chooses *F* on the grounds: "Sociometry, in my mind, is a method, like Rorschach, poll interviews, etc. Definition *F* recognizes this, avoiding spurious claims, at the same time *not* tying it down to any method of analysis like *G*". Some of the "sociometric" pioneers, such as M. E. BONNEY and M. L. NORTHWAY, prefer *F*.

Nevertheless, *B*, *C*, and *E* are the definitions which have received most preferences, and they have usually been chosen because of their intermediate inclusiveness among definitions referring to the human area and because of the chooser's feeling that, after all, they correspond best to the work usually done under the label of sociometry. G. W. ALLPORT, choosing *E*, says that it is "a bit broader than strict Moreno-ism, but not so broad as to lose the distinctive value of the method". The somewhat wider definition *C* is given first choice by S. MOLDAWSKY for the following reason: "Method and quantification of data can change as new methodological discoveries are made — but what is being measured won't". It is interesting to note that J. L. MORENO himself selects definition *B*, that is, he gives his choice to a definition far broader than that which is considered by others to be typical Moreno-ism. Definition *B* is considered by MORENO to be nearest to his original definition in "*Who Shall Survive*?" (1934, p. 10). H. H. JENNINGS, too, finds definition *B* adequate: "it differentiates sociometry from the all-over larger fields of sociology and psychology". C. PROCTOR, also choosing *B*, writes: "Although the attraction-rejection-neutrality type of relationships constitute the major type of relationship, the definition should also include such types as 'providing information for —', 'giving commands to —', 'establishing values for —', etc."

### c. *Other formulations proposed*

Most of the investigators have given no answer to question 4 on the card, probably being of the opinion that most important nuances are already described in the questionnaire ("you have covered every possibility", says G. W. ALLPORT, for instance). However, out of the 131 cards analyzed here, 36 propose definitions more or less deviating from *A—M* in meaning or phrasing. In this connection only a few examples will be mentioned (more will be presented in the separate article referred to above).

Several individuals object to the phrase "quantitative treatment" appearing in most definitions. Some of them object to the word "quantitative", others to the word "treatment". Some simply omit the word "quantitative" (e. g., U. G. FOA, J. NEHNEVAJSA), others add to the phrase by saying "quantitative and qualitative", and O. J. HARVEY proposes the word "quantifiable". N. E. GRONLUND wants to replace the word "treatment" with the word "study", since the word "treatment" "seems to imply *analysis of data*, instead of the entire process of planning for, gathering, analyzing and interpreting data". R. LIPPITT replaces "treatment" by "measurement procedure", N. T. WALTER by "evaluation". E. M. FULLER wants to add the phrase "or formulized description" after the word "treatment" because this "seems to include configurational approach better". I. R. WESCHLER gives the following rephrasing of definition *C*: "the scientific study of those interpersonal relations which can be quantified in terms of preferential patterns".

Some new definitions stress the idea behind our expression "subject report method" by different phraseology: "The study of interpersonal relations in group situations from the standpoint of the phenomenology of the participants" (N. A. POLANSKY; most similar to *D*); "a quantifiable technique of ascertaining negative and positive interpersonal, intra- and intergroup relationships as these relationships are perceived by the respondent" (O. J. HARVEY; most similar to *E*). A broad definition is proposed by R. D. BOCK: "Sociometry is the quantitative study of social collectives in terms of the pair-wise relations among their members, where the members may be individuals or smaller collectives, and not necessarily human" (most similar to *I*). A still broader definition is given by V. CERVINKA: "measurement of social phenomena". He finds this useful as having no "redundant connotations. Also it does not make it synonymous with either social psychology or sociology" (most similar to *H*).

## 3. Different Definitions: Final Decision for the Language of the Present Report

A final choice among our definitions is still difficult, since different considerations — considerations of frequency, approximation to etymological roots, approximation to work done, probability of winning general acceptance, etc. — may lead to different conclusions. *Considerations of frequency* in the present inquiry clearly favor *C* in the first place, *B* in the second, both ranking high above all the others as to first choice support. *Considerations of etymological roots* make the more specific definitions *D*, *E*, *F*, and *G* as well as *K* and the indeterminate *L* and *M* seem less adequate than the others. In view of the many good reasons given for some of these definitions, it may seem somewhat ruthless to refer to vague etymological grounds for ruling them out. This is of course right. However, we have to make a choice, and weak arguments may also contribute to this, even if, considered singly, they cannot motivate any final decision. *Considerations of work done* clearly favor *M*, while *L* and *G* perhaps best describe the emphasis of the MORENO school.

However, several respondents feel a developmental trend away from limited and narrow definitions towards less specific ones. L. D. ZELENY finds that the definition "quantitative social psychology" is apt for "the trend in the U. S.", and E. S. BOGARDUS writes: "Sociometry began with *L*, then became *G* and is moving toward *C*". *Considerations of the probability of winning general acceptance* cannot be more than guess-work, and have to rest on the considerations mentioned already. Definitional substitutes such as *L* and *M*, and the seldom preferred definition *K* are not very likely to be generally accepted. As S. MOLDAWSKY, U. G. FOA, and others have pointed out, definitions that delimit the method of observation may easily be felt to be obstacles to methodological innovations: therefore in several instances, the definitions which only delimit the phenomenological area are preferable to the more restricted ones. And since MORENO, the pioneer in the field and the founder of "*Sociometry*", prefers the broad definition *B* (this is true of several other pioneers, such as, e. g., J. H. CRISWELL, S. C. DODD, H. H. JENNINGS, and G. A. LUNDBERG in the U. S. and M. KOSKENNIEMI in Europe) to those more specifically limited ones which are considered by others as representing strict Moreno-ism, there is reasonable probability that the wider type of definition would also be accepted within the Moreno school.

There are certain reasons, then, which help justify our eliminating definitions *D—G* and *K—M* from further consideration. Six definitions are left: *A—C* representing three levels of wideness with respect to collective human phenomena, and *H—J* representing three levels of wideness with respect to collective human and animal phenomena. Definitions *A* and *H* are perhaps somewhat too wide and somewhat too indeterminate in so far as they refer to fields of work, the boundaries of which are not always quite clear.

Considering the four definitions left, we have to make two decisions: (a) whether to include animal phenomena or not, and (b) whether to restrict the field to preferential relations or not. Most respondents do not include animal phenomena, perhaps because most work has been done on human collectives. Although this question is of no importance for the present text, we should prefer not to exclude animal phenomena; in fact, no one has given any definitive reasons for so doing. Our final choice would then be between definition *I* and definition *J*. Both concepts seem important, and both then need a term. We could speak about *I*-sociometry and *J*-sociometry, but such designations are not likely to be widely accepted. For the purpose of the present report we make the following decisions. *The simple term "sociometry" is used in the broad meaning to refer to measurement*[8] *of every kind of interhuman and interanimal relations. The term "preferential sociometry" is used when we want to refer specifically to the measurement of interhuman and interanimal relations which can be described in terms of preferences ("attraction-neutrality-rejection in a choice situation")*. However, our final definition of "sociometry" could be made more descriptive of present trends (referring to the four definitions most often preferred: *B*, *C*, *E*, and *F*) without being made more restrictive by a formulation like the following: we may regard sociometry as dealing with *measurement of every kind of interhuman and interanimal relations with primary focus at present on research into human preferential situations by means of more or less specific subject report methods.*

The decisions in this section are not necessarily final in character: our primary aim has been to clarify our own use of the terms in the present text. However, at the same time, we have wished to make these decisions after a more thorough discussion of different possibilities than is usual, in the hope that such a discussion would be of use to future workers in this field whether they accept our decisions or not.

In the investigations to be reported subsequently, we are primarily interested in an analysis of interhuman *preferences*; the "sociometric status" derived from the workmate selections primarily belongs to "preferential sociometry". When we want to stress this fact, we shall talk about "sociometric choice status", or "sociopreferential status".

## III. THE FIELD OF SOCIOMETRY IN RELATION TO DIFFERENT SOCIAL SCIENCES

Two recent formulations by MORENO will be cited: "Sociometry cuts through all social sciences as it deals with social phenomena at a deep level . . . before they 'e'merge into 'psychological', 'sociological', 'anthropological', or 'economic' phenomena" (1953, p. 54). — "The sociometric system is not an all-encompassing system of social relations, but itself a subsystem within a larger framework . . . The over-all top of the system is socionomy; it has three branches, sociodynamics, sociometry and sociatry" (1955, p. 88). Socionomy is defined as the science of social "laws", sociodynamics as the science of dynamics of groups and intergroups, sociometry as the science of socius measurement, and sociatry as the science of social healing. The two formulations give somewhat different impressions, but this much is clear, that MORENO does not indentify sociometry with the whole or with part of one of the conventional social sciences.

---

[8] We follow the advice and avoid the expression "quantitative treatment".

The relation of sociometry to sociology and psychology is perhaps most interesting. The interrelation between psychology and sociology is described by FURFEY in the following way: "Sociology studies human activities from the standpoint of society; psychology, from the standpoint of the individual... Social psychology is an area of overlap in which the precise focus of interest is the relation of the sociological and the psychological" (1953, p. 145—146). According to DODD (1943), sociometry is to be included as a sub-division of sociology (cf. definition *B* above).[9] Sociometry is differentiated from social psychology — still according to DODD — by the fact that it centers its interest not only on the individual's behavior in a social situation, but also on the social situation as a whole.

On the other hand, MORENO has been reproached for a latent *psychologism* or even *emotionalism*: there has been the objection that in his interest for the intermental psychology of preferences (the psychological geography etc.) he has abandoned other aspects of social reality without further consideration (cf. GURVITCH 1949, ZAZZO 1949). According to NORTHWAY, the assumptions and methods of sociometry are fundamentally psychological rather than sociological, centering around the individual's choosing among people — a psychological problem comparable to the interest of psychophysics in the individual's discriminations among objects (1946, p. 233—234).

It does not seem to be of importance to follow up arguments like these, as long as the boundaries of the conventional sciences are as vague as they are. Rather, it is of interest to see that fruitful results have once more been reached — as often before in the history of science — by a crossing of the earlier boundaries between different fields of study. Indeed, sociometry may be regarded as a true hybrid of the two parents sociology and psychology. Together with other new developments in the same direction, it has begun to shed light over an earlier "dark spot" between the institutional and demographic study of behavior on the one hand and the clinical and experimental study of the individual on the other (cf. COTTRELL & GALLAGHER 1941, p. 315). If the psychologist widens his conventional field of interest to a macro-psychology dealing with multi-individual reaction-structures, and if the sociologist concentrates on a micro-sociology — the intimate study of small group phenomena — both may find a common interest in the problem area attacked by people calling themselves sociometrists.

---

[9] The transfer of the journal "*Sociometry*" to the American Sociological Society (from 1956) may be mentioned in this connection as a sign of the intimate relationship between "sociometrists" and sociologists.

## IV. THE FIELD OF SOCIOMETRY SUBDIVIDED

Many different subdivisions of the field of sociometry are possible. Three examples will be mentioned here.

*Pure v. Applied Sociometry: Socionomic and Sociatric Aims.* Sociometry may be regarded as a tool for analysis (diagnosis) of interpersonal relations *in situ.* Fact-finding or diagnosis is however no aim in itself. The sociometrist may have the scientific aim of utilizing the findings for testing hypotheses about the assumed lawfulness of relational similarities or differences (*socionomic aim*), or he may have the applied aim of utilizing the findings for therapeutic procedures (*sociatric aim*).

This fundamental distinction is more or less clearly found in subdivisions made by different workers under various names. Thus, MORENO distinguishes between the *research* procedure, the *diagnostic* procedure, and *therapeutic and political* procedures (1937 b); or between *dynamic or revolutionary* sociometry, *diagnostic* sociometry, and *mathematical* sociometry (1948); or, simply, between "*hot*" sociometry (in which research is a by-product), and "*cold*" sociometry (in which research is the central aim; 1954). DODD (1943) distinguishes between *sociometry* as the research method, and *sociatry* as the therapeutic method. NEHNEVAJSA (1955) differentiates between "die soziometrische *Theorie der Gesellschaft*", "die soziometrische *Diagnostik und Therapeutik*", and "die *empirische* Soziometrie". The present writer finds that some of these subdivisions are somewhat unclear as far as the interrelatedness of the different parts is concerned, and considers the formulations in the introductory paragraph somewhat less obscure on this point.

MORENO's primary aim was undoubtedly *sociatric*: he wanted to create a "*medical* sociology" (1937 b, p. 206) with the object of transforming the untherapeutic community into a therapeutic one.[10] The non-sociatric sociometry is often regarded by him as a "halfway sociometry" (1947 a, p. 270). In addition to *"Sociometry"*, the journal started in 1937, a new journal was started in 1947 which emphasized therapy and was called *"Sociatry"*. In this journal, the name of which was changed to *"Group Psychotherapy"* in 1950, as well as in the earlier volumes of *"Sociometry"*, the articles with therapeutic aims are not only confined to group-directed or individual-directed therapy based on sociopreferential diagnosis, but also often deal with extra-sociopreferential approaches. As MORENO did not consider his therapeutic program possible without search for laws, tendencies and ordered patterns, he stressed the concept of *socionomy* from the very beginning (1934, p. 10). Many of his followers have been exclusively interested in this more pure type of research.

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[10] MORENO has often confirmed the fact that the feeling of the importance of such a therapeutic "revolution" was his driving motive (1949, p. 254). In his book of collected

*Descriptive v. Dynamic Sociometry: Sociostatic and Sociokinetic Approaches.* MORENO once distinguished between *descriptive sociometry* and *dynamic sociometry.* The former gives a static picture of momentary structure, the latter shows the effect of certain parts within this structure on other parts (1937 b, p. 213). This distinction between sociostatic and sociokinetic approaches seems to be important and may be used to illustrate different levels of interpretation.

*Group-Directed v. Individual-Directed Sociometry.* Sociometry was characterized above as a hybrid of two behavioral sciences: the societal study of sociology and the individual study of psychology. A subdivision of sociometry may be made, using as the primary *fundamentum divisionis* the two different views on research borrowed from these parent sciences. Thus, we can distinguish between research having total groups as the primary object of the research (*group-directed sociometry*) and research having group-members as the primary object of the research (*individual-directed sociometry*). We wish to stress that the term "individual-directed" does not of course mean an approach that *excludes* considerations of the group and the interindividual relations (this would not be sociometry any longer). Instead, the term refers to a focusing of interest on the individual as a center of relations and with his own idea of the social surroundings.

papers in 1951, which has the somewhat confusing sub-title "an approach to a new political orientation", he says that he wants to create a sociometrically orientated socialism, thereby substituting the simplifying economical class-thinking of the macrosociological Marxism by a dynamic socio-psychological planning, i. e., not only cure the uneven economical distribution, but also the uneven "sociometric" distribution; indeed, simply liberate the "sociometric proletariat"! (p. 168).

## CHAPTER 2

# GENERAL PRINCIPLES FOR COLLECTION OF SOCIOPREFERENTIAL DATA BY MEANS OF SUBJECT REPORT METHODS

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## I. INTRODUCTORY NOTE ON ONE WAY OF DETERMINING METHODOLOGICAL TRENDS

Hitherto, our main interest has been in the field contours of sociometry. What we need now is a more differentiated conception of the field structure. In this and the following chapter, there will be a detailed discussion of the methods which have already been used within preferential sociometry, as well as of certain innovations proposed by the present writer. Then it will be of interest not only to cite single authors and investigations, but also to provide an approximate quantitative picture of the frequency of different types of procedure and developmental trends in methodology. For this purpose, the present writer worked through ten volumes of the journal "*Sociometry*" (1945—1954), tabulating different kinds of information. Excluding any articles with primary focus on psychodrama and any articles containing less than three pages in the first five volumes, the *total sample* (*T-Sample*) of articles considered is 249, of which 130 are found in the five earlier volumes (*TA-Sample*), and 119 in the five later volumes (*TB-Sample*). Many of these articles have a theoretical or methodological aim and do not report empirical investigations. Some report empirical investigations of an extra-sociopreferential kind. Our primary interest has been a *special sample* of articles reporting investigations using some kind of subject report method in a sociopreferential situation. We found one hundred such articles (*S-Sample*). Of course, in some cases there is some doubt whether an investigation should be classified as belonging to this category or not; those interested in our final selections are, therefore, referred to the References, where the articles in the S-Sample are included and marked with an asterisk. In order to be able to analyze developmental trends, the S-Sample was divided into sub-samples in the following way: the *SA-Sample* containing the 50 earliest articles (1945—1950: 6), and the *SB-Sample* containing the 50 latest ones (1950: 7—1954); in addition there were the *$S_{I}$-Sample* with the 33 earliest articles (1945—1948), the *$S_{II}$-Sample* with the 33 following

(1949—1952: 2), and the *$S_{III}$-Sample* with the 34 latest articles (1952: 3—1954).[1]

## II. PRELIMINARY SURVEY OF METHODS

In a survey of "sociometric" methods in 1939, FRANZ discusses the five following: (1) sociometric test, (2) spontaneity test, (3) sociogram, (4) sociometric assignment, (5) spontaneity training. To these LOOMIS & PEPINSKY (1948, p. 265 et seq.) add four more: (6) acquaintance test, (7) role test, (8) interaction- or act and pause test, (9) process analysis.

However, this survey is somewhat unsatisfactory, since it mixes diagnostic with therapeutic methods, methods of data collection with methods of data analysis, etc. A clearer picture is given by the following restructured survey:

I. *Methods for sociopreferential diagnosis:*
  1. *Direct (pure) preference methods* (using written or oral choices unknown to the chosen):
    A. *methods of data collection:*
    "sociometric test proper", (acquaintance test);
    B. *methods of data analysis:*
    sociopreferential diagrammatics (sociograms, etc.), arithmetic, and semantics.
  2. *Indirect (impure) preference methods* (using analysis of face-to-face interaction):
    A. *primary test-situations:*
    spontaneity test (forced emotional interaction in order to understand a relationship better), role test (to determine how adequate are the social roles of the subject);
    B. *observational approaches:*
    act and pause test (chronographic methods for assessing the individual's activity and passivity in relation to his co-actors), complete process analysis (electric recording of interaction).

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[1] The figures after the year denote here the number of the article in the S-Sample (*not* in the T-Sample). — We should like to stress from the beginning that we do not expect to derive methodological *norms* from the quantitative analysis of methodological *trends*; the majority may of course be wrong, and the élite-minority right. Nevertheless, analysis of usage is always of interest, and our aim has been to make this analysis in a less impressionistic way on certain issues than is usually done in surveys of scientific literature.

II. *Methods for therapeutic application of sociopreferential diagnosis ("sociatric methods"):*

1. *Environment-directed treatment:*
   sociometric assignment (regrouping according to the revealed psychological structure);
2. *Individual-directed treatment:*
   spontaneity training (role-playing to further adjustment to a plurality of environments).

Most of these methods are outside the scope of the present chapter. We will consider here neither the therapeutic methods, nor the methods for interaction study, and the discussion of data analysis will be postponed to chapter 3. Thus, in this chapter we will be concerned primarily with the "sociometric test proper" and different variations of this fundamental technique.

## III. THE PRIMARY SOCIOMETRIC CHOICE SITUATION IN MORENO'S ORIGINAL TECHNIQUE

MORENO's original technique of assessing the interpersonal preference relations, the so-called "sociometric test", is very simple. It requires individuals to choose associates for a special type of interaction. In MORENO's early classroom studies, the investigator entered the classroom and addressed the pupils as follows: "You are seated now according to directions your teacher has given you. The neighbor who sits beside you is not chosen by you. You are now given the opportunity to choose the boy or girl whom you would like to have sit on either side of you. Write down whom you would like first best; then, whom you would like second best. Look around and make up your mind. Remember that next term your friends you choose now may sit beside you" (1934, p. 13).

Among other things, the following points are of methodological significance. When the pupils make their choice, *their identity is known.* This gives a better picture of the inner structure of the group: the investigator can detect mutual choice pairs and groups of mutually related individuals, etc. Furthermore, according to MORENO, it is important that the choice situation is *meaningful* and *interesting* to the subjects. The investigator promises that the choice wishes will be put into practice. Finally, MORENO says, the choice should be related to a definite *choice aspect* (*criterion*)[2], such as studying in proximity or living in proximity. The importance of the two points just mentioned is stressed repeatedly. A representative quotation may be taken from an editorial board note to a paper by POLANSKY, LIPPITT, & REDL: "Techniques using a specific criterion but not involving group rearrangement have been designated as 'near-sociometric'. However, when no criterion is involved in the choosing, as in such questions as 'Who is your best friend?' or 'Whom do you like best?', the data may best be described as neither sociometric or near-sociometric, but rather as projected 'liking' reactions in an undetermined setting" (1950, p. 49; cf. definition *F* in chap. 1).

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[2] In the present report, the term "choice aspect" (or "preference aspect") is used instead of "criterion", as the latter word has a different meaning as conventionally used by psychometrists (cf. CRISWELL 1949, BJERSTEDT 1954 a).

## IV. OUTLINES OF THE DEFINITION OF THE PRIMARY SOCIOMETRIC CHOICE SITUATION

Perhaps it would be better not to speak of a "sociometric test", but instead to use a term like "sociometric choice situation". The term "test" has led many investigators to overlook the differences between this technique and what are normally called tests in psychology and tempted them to a premature and routine application of psychometric concepts in this field (cf. CRISWELL 1949, p. 290).

The instructions to the subject consist primarily of a *definition of the preference situation.* This definition should as a rule contain the following items of information:

(a) *preference aspect* defined: what kind of interaction setting (sitting together, working together, living together, etc.)?

(b) *preference effect* defined: what practical outcomes if any; are the choices or rejections private or not, etc.?

(c) *preference area* defined: among what individuals (among individuals in my own classroom, among individuals in the whole school, among personal acquaintances, etc.)?

(d) *preference sign* defined: which end of the preference scale (*pro-sign*: most liked, positive choices, or *anti-sign*: least liked, negative choices)?

(e) *preference method* defined: partial rank limited, partial rank unlimited, total rank, pair comparisons, etc.?

(f) *preference-motivation request* defined: are the subjects requested to give choice motivations or not?

In the following text we are going to discuss these different items in more detail.

## V. PREFERENCE ASPECT

### 1. Introduction: Preference Aspect and Frame of Reference

It is a well-known sociopsychological fact that the "perceptual frame of reference" is of importance for our general attitudes (cf., e.g., ALLPORT 1943). It is evident that this is also the fact in the more specific sociopreferential situation; the inter-individual differences in the evaluation of the same person may often be said to be due to differences in the perceptual frame of reference. These differences are of varying kind:

(a) *Different individuals have different points of neutrality on the same scale of judgment.* This reasoning, which we find, for example, in the discussion of the adaptation level in weight-lifting experiments (HELSON 1948) and in certain more general sociopsychological argumentation (SHERIF 1936, NEWCOMB 1952), could be illustrated with Figure 2.1 a, inspired by ROMMETVEIT's (1953, p. 15) visualization of the general relationship between frame of reference and attitude. Linking this picture to our sociopreferential problems, it could be read as follows: In the situation of selecting a workmate, both *x* and *y* evaluate *z*. Both give their judgment starting from the same data, viz. the working ability of the individual (the horizontal line indicates this unidimensional aspect of the social preference). The individual *z* is judged as desirable by *x*, since *x*'s frame of reference ($Frame_x$) is anchored low (his own working ability being rather poor), but as not desirable by *y*, since *y*'s frame of reference ($Frame_y$) is anchored high (*y* is a very able worker).

(b) *Different individuals have aspect-different scales of judgment*, i. e., they evaluate their fellow-beings from different angles of approach. In order to preclude this to a certain extent, the sociometrist demands a specification of the choice aspect, e. g., by stressing that the choice at present is for a workmate. Nevertheless, the scales of judgment *may* be dissimilar — and they very often are — due to one of the following reasons:

(1) The individuals interpret the instructions (the verbal stimuli) in varying ways (*lacking interpersonal synonymity*).

(2) Another aspect of judgment which seems more important (more relevant) to the individual has created a general attitude of approval or disapproval. The choice object cannot be evaluated "dispassionately" from the specific choice aspect (*generalized preference*).

(3) The chooser not only estimates the chosen with respect to the chosen's efficiency in a certain abstract situation (as a workmate *in general*), but also takes into consideration the specific relational point of

Fig. 2.1.a

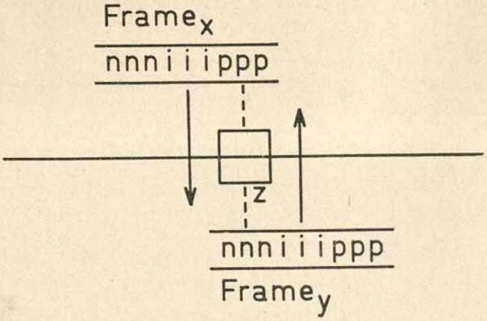
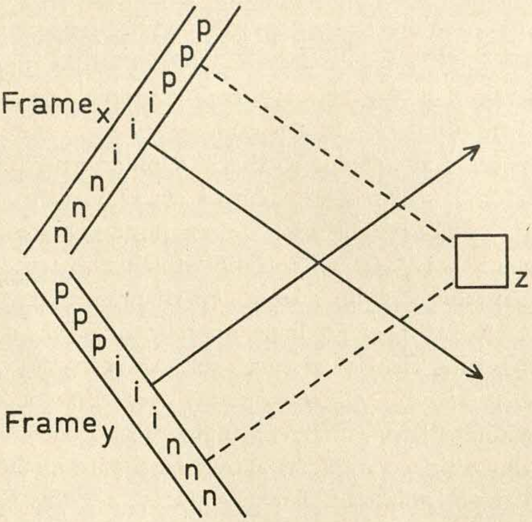


Fig. 2.1.b



*Key:* $p$ = positive choices
$i$ = indifferences
$n$ = negative choices

Fig. 2.1. Frame of reference and preferential reaction.

view (the chosen's suitability to *work with me* and with no other). Then, of course, not only his working ability *per se* is of importance, but its relation to *my* ability is also relevant, as well as, for instance, our previous experience of being together, our common interests, and similarity of "personality".

The fact that the scales of judging are dissimilar in these ways, in spite

Table 2.1. Number of Choice Aspects in Different Sociopreferential Investigations (The S-Sample from "*Sociometry*")

| Number of choiceaspects | Number of investigations in different samples | | | | |
|---|---|---|---|---|---|
| | SA | | SB | | Total S |
| | *N* | % | *N* | % | *N* & % |
| 1 | 28 | *56* | 31 | *62* | *59* |
| 2—4 | 16 | *32* | 14 | *28* | *30* |
| above 4 | 6 | *12* | 5 | *10* | *11* |
| Total number of investigations | 50 | | 50 | | 100 |
| Total number of choice aspects | 126 | | 108 | | 234 |
| Mean number of choice aspects | 2.52 | | 2.16 | | 2.34 |

of the specification of the choice aspect, cannot always be said to be undesirable. Certainly it is not desirable in case (1) above: we want to exclude differences that are due to the lack of interpersonal synonymity. But in cases (2) and (3), it is an occurrence which we in no way seek to forestall (what would be the use, for example, of scales of judgment identical in such a way that all the individuals chose the same person?). Every individual may have his own system of preferences, and to consider such differences as errors, would mean preventing the investigator from entering an interesting field of research (cf. ALLPORT 1955, p. 29: "When we know a person's *ordo amoris* we truly know that person"). That the individual is evaluated from different angles of approach, can be described visually with the same technique as above. In Figure 2.1 b the two arrows indicate the different points of view.

## 2. The Number of Aspects

The number of choice aspects to be used depends, of course, on the intention of the investigator. An error often made, but one which we are warned against as early as the first edition of "*Who Shall Survive?*" (1934), is that the investigator having used one kind of aspect feels entitled to say: this child is popular, that one is unpopular; this pupil is emotionally expansive, that one is not. Of course, a child may have an expansivity that is low in relation to one choice aspect, but high in relation to another. Until there has been extensive research work on the possibilities of generalization, a testproximal restrictiveness is to be recommended: a child's position in the group is primarily to be considered in direct relation to the aspect used. *If* we want to make general statements, and *if* we do not have empirical findings on how far we may translate our specific choice aspect into general terms, one way out of the dilemma may be to use a large number of choice aspects; this has often been recommended. How many aspects are generally used? To answer that question we may refer to our tabulated data from the empirical sociopreferential papers in the ten volumes of "*Sociometry*" (the S-Sample mentioned above). Table 2.1 gives the information in condensed form. We see that, in spite of a remarkable variation, the distribution is heavily weighted in favor of the single-aspect procedure (59 %) — only 11 % use more than four aspects.

## 3. The Specificity of Aspects

The number of choice aspects depends in part of course on the kind of choice aspects, especially on the specificity of each preference setting. As mentioned above, MORENO from the beginning cautioned against the use of questions such as "Who is your best friend?" or "Whom do you like best?", i. e., he recommended a more definite specification of the choice aspect.[3] One reason for so doing is that the non-differentiated aspect may be too abstract, making the choice situation less realistic to the subject. But it is a difficult question to decide how far we are to go in this process of specialization. Of course, even such a choice aspect as "Whom do you prefer as a playmate?" is unanalyzed to a certain extent. It is quite possible that the individual may prefer different individuals in different kinds of play. *Theoretically* the process of specification may be carried *ad infinitum.* But the more specific the single question, the more it seems to be desirable to have many different choice aspects.

There seem to be several reasons for preferring one or two relatively "broad" choice aspects (such as workmates, playmates, etc.) to a greater variety of more "narrow" questions. Some of these reasons depend on the *data collection*: (a) a great variety of specified questions may *diminish the choice spontaneity* of the subjects; (b) there may be a risk of rousing *meaningless or unessential reactions* (provoking ingenious reasoning instead of spontaneous feelings); and (c) the impossibility of using too specific a choice situation is often obvious with a *broad sample of individuals*, some of whom may have experience of it, whilst others have not. — When LEWIN (1936 a, p. 163—165) speaks about the psychological life space as a "finitely structured space", he stresses the fact that even if psychological total regions may be divided into part regions, this differentiation, if carried too far, will produce a meaningless analysis lacking psychological soundness. The difficulties of the general administration of specific questions have been repeatedly referred to (cf. STEWART 1947, p. 15; LIPPITT, POLANSKY, & ROSEN 1952, p. 40); one difficulty is that situational factors in which we are not interested may play a larger part (BRONFENBRENNER 1944 a, p. 41). On the whole, in so far as we are interested in essential preferences as a basis for predictions, we ought to remember the complementary relationship between descriptive specificity and predictive possibility: too many details often means a lessening of universality.

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[3] This seems to be a more adequate way to express his advice than his own formulation that we should not use such questions as have *no* "criterion". A "criterion-free" request would more properly be: "Choose someone!" — A further discussion of *specificity* v. *diffuseness* of a relationship may be found in PARSONS 1951, p. 65—67.

Other reasons depend on the *treatment of the data.* If we use one broad aspect as an *integral measure* of status, the problem is relatively simple. But if we use several different aspects as *segmental measures*, combining them by simply adding them on, as is often done (cf., e. g., GOODACRE 1951), we often do not know how to evaluate our result. As long as we do not know very much about the relationships between different aspects, we cannot recommend this procedure. Relatively seldom are their roles separable, often there is an intersection or inclusion. The unidimensionality of different aspects may be clarified by some method similar to GUTTMAN's scaling method (cf. STOUFFER, GUTTMAN, SUCHMANN, LAZARSFELD, STAR, & CLAUSEN 1950; RILEY, RILEY, & TOBY 1954; cf. the last ref. also for the concepts "integral" and "segmental" measures). However, many difficulties and ambiguities are still inherent in these methods (cf. remarks by PEAK 1953, p. 260—266). In fact, obvious logical patterns may be more effectively dealt with by *a priori* reasoning.

All these arguments in favor of a *relatively* low degree of specification do *not* mean that we recommend questions of the type: "Whom do you like best?" or "Whom do you like least?" Even when we really want to know these main sympathies and antipathies — and this is, in fact, often our primary aim — it is often better to avoid this type of question, since partly (a) people are not consciously aware of them, and partly (b) do not want to reveal them in this way. The situational factor is so unimportant that the subjects consider the answer to be something private, "none of your business". A concrete choice situation makes them aware of their preferences as well as relieves them of what we could call "*preferential* *anxiety*", their anxiety about having preferences (cf. MORENO 1937 b, p. 219; INFIELD 1950/51, p. 310).

### 4. Different Categories of Aspects

Preference aspects may be of many different kinds. JENNINGS (1947) makes a very important distinction between *socio-criteria* which are collective in nature, such as working in a common work unit, and *psyche-criteria* which are strictly private and personal in nature, such as associating in leisure-time. A similar distinction is made by MASSARIK, TANNENBAUM, KAHANE, & WESCHLER (1953), separating two kinds of interpersonal activities among people in an organization: *goal-directed* activities, clearly related to organizational goals (turning to others for advice in work, being given directions or orders, etc.), and *nongoal-directed* activities which are not so related (lunching and meeting socially after working hours, etc.).

In this report we will occasionally use a rough classification similar to the two just mentioned. The term "*group-gen*" has been used by CERVINKA (1948) for anything that acts as a group-generating stimulus, i. e., a stimulus to bind people into a group. With respect to the type of group-gen, we may distinguish between *personal aspects*, *semi-personal aspects*, and "*formalized*" *aspects*. In *personal* preference aspects, the primary group-gen is other people only. In *semi-personal* aspects, the primary group-gen is a "non-formalized" activity, i. e., an activity, which is free from predetermined and extrinsic rules. Finally, in *formalized* aspects the primary group-gen is a "formalized" activity, i. e., an activity, the structure of which *is* predetermined by explicit and extrinsic rules. The term "formalized aspects" as used here partly covers the same field as "socio-criteria" and "goal-directed activities", while the term "semi-personal aspects" partly corresponds to the concepts "psyche-criteria" and "nongoal-directed activities". However, our classification seems to suit our purposes somewhat better. The term-couple "goal-directed — nongoal-directed" is designed for the special setting of a formal organization (and the term "nongoal-directed" is misleading if given without some particularization). The "psyche-socio" distinction covers a very important concept, but the terms do not seem to be the best possible for our particular purpose (we find the type of role in the formalized situation more important than its collective nature which is emphasized by JENNINGS' term). — As defined here, personal and semi-personal aspects may be characterized as more or less *subjectivity-inducing aspects* (emphasizing as they do the chooser's own value-system), whereas the formalized aspects may be considered as *intersubjectivity-inducing aspects* (depending on a common value-system, a common frame of reference for assessing a person's suitability in the specific role which is premodelled by explicit and extrinsic rules). It is clear that the relationship between personal and common value-systems is very complicated, and that the conceptual delimitation is, therefore, of a purifying kind (we will discuss this question in more detail below), but, in spite of a certain artificiality, the different classifications mentioned seem to be of some use in furnishing us with a simple framework which will serve as a guide in our attempts to reduce a complex field to order.

Some examples of the preference aspects used may be taken from our sample of sociopreferential investigations (the S-Sample referred to above). *Personal aspects* (where the primary group-gen is other people only, without reference to a specific activity) are often used by investigators interested in reports on friendship and general attraction. It may be interesting to observe that although friend choices and liking-reports are explicitly and emphatically excluded from the field of the "sociometric test proper" (cf. above), nevertheless, out of the 59 single-aspect investigations in our sample no less than 23 (or 39 %) use precisely these unorthodox aspects. ("Who are your best friends here at school?", "Who in the class do you personally like best?", "Name the six people in the group towards whom you feel most attracted." and similar phrases).

*Semi-personal aspects* refer to a "non-formalized" activity often of the "leisure-time" type. In child investigations, the "playmate" aspect is very common ("Which boys or girls in this class would you like best to play with you during recess?", etc.). At the college level, the "roommate" aspect is often used ("List in order the first, second, and third choice of persons now living in this house, whom you would like to have for roommate next year."). Other examples from child investigations are: "who would you like to sit with at dinner", "follow to another classroom", "have as a guest in your home", "take home to tea", "go to a movie with", "go on a picnic with". From the college level we may cite aspects such as: "people to keep in touch with after college", "choice for chatting with", "double-dating companion", "camping-companion". In investigations among adults we find similar examples: "talk over personal affairs with", "chat with socially", "have lunch with", "invite to your home", "go to sports and social affairs with".

*Formalized aspects* refer to a special "formalized" activity usually in a working context. From the child level we may mention, for instance:

"work with in a discussion group", "help with school work", "be president of the class"; from the college level: "co-worker in a committee on race problems", "representatives of the dormitory", "resident assistant"; and from the adult level: "work with in the team", "work with in the same headquarters", "consult in a work situation".

An important problem is to what degree different categories of choice aspects such as those discussed evoke different choice structures. This question has been dealt with by some research workers and will be further considered below.

## VI. PREFERENCE EFFECT

### 1. Interaction Vector and Interaction: Introductory Comments on the "Reality" of the Choice

### A. *"Pure" preferential orientation as distinguished from co-being*

How "real" are the relationships disclosed by means of a sociometric preference situation? Would it not be better to study preferences by interaction observation (with the aid of methods more or less similar to those discussed by ARRINGTON 1939, CHAPPLE 1940, BALES 1950, ZANDER 1951, BECK 1954, and others)? These two questions seem natural and important; however, the present discussion will try to show that they are partly founded on a rather superficial conception of the problem. In the first place, it is not a simple question to decide what is meant by the word "real". What is more "real": the wishes expressed in the sociometric preference situation or the individuals' being together which is observed at a specified time-space point? It seems that we deal with different *kinds* of reality rather than with different *degrees* of reality. There seems to be a clear *a priori* reason not to expect a complete correspondence between direct observation of interaction and choice directions in a sociometric preference situation. Thus, neither the choice method nor the observation method can be invalidated by this non-correspondence. An example may be illuminating.

By direct observation, we see that *A* and *B* do not interact, and perhaps we then assume some kind of barrier between *A* and *B*. However, this barrier may be of various kinds; the observation cannot tell us much about that. The sociometric preferences may show one of the following situations:

(1) *A* rejects *B*, *B* rejects *A*. Then, both may have a tendency to move

away from each other. The barrier can be said to depend on a mutual resistance.

(2) *A* chooses *B*, but *B* rejects *A*. The barrier depends on one of the individuals.

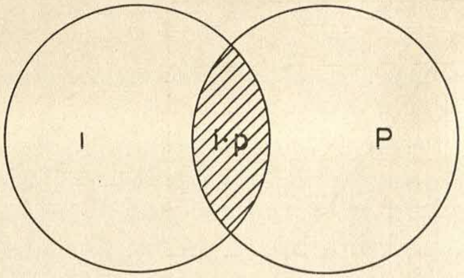
(3) *A* chooses *B*, whereas *B* is indifferent. The fact of lacking interaction may in this case depend on some kind of "internal" barrier in *A*. Perhaps he is shy and does not know how to behave before the popular *B*. In this case the situation is rather different from the earlier cases. The barrier is impermeable in the direction *A* to *B* only, not in the opposite direction. A third person may in this case cause *B* to "go in the direction of" *A*: the teacher may place him in a work group together with *A*, etc.

(4) *A* chooses *B*, *B* chooses *A*. The barrier we assumed in the observation of non-interaction, may then have been of a "situational" character. A third individual *C* may have "laid hold of" one or the other of them, etc.

The choice wishes as reported in the sociopreferential situation are thus important facts partly giving *other kinds* of information than the interaction observation. We may express the interrelation between the two sets of data thus: the sociometric choices give "*interaction vectors*", whereas the observation gives the "*interaction*" (cf. the concept of "performance vector" in TOLMAN 1955). The category of people wishing interaction with a certain individual and the category really interacting with him may usually be expected to intersect but not to coincide (cf. Figure 2.2). MORENO criticizes research which remains satisfied (as, e. g., he says, do ROETHLISBERGER & DICKSON 1939) with showing discrepancies between interaction in formal and informal situations. The differences between both these on the one hand and the "wished for" relations on the other are also very important — especially when we want to interpret and predict group-dynamic changes (MORENO 1951, p. 130).

Our concept of *interaction vector* or "*pure preference*" may perhaps be included in the concept of *interpersonal orientation* (cf. PARSONS 1951; PARSONS & SHILS 1951; RILEY, COHN, TOBY, & RILEY 1954; see also the discussion on the "internalized interact", COTTRELL 1942) of an individual: his perceptions, expectations, etc., with respect to others. We may therefore also speak about "pure preferential orientation" (cf. Figure 2.3).

In investigations of animal social life, subject report data cannot be obtained. A disadvantage, often pointed out in such investigations, is that it is difficult to know if the fact that animals are observed as being together depends on social factors (imitation, maternal care, etc.) or on non-social factors (a common interest in spatially concentrated food, water, coolness, etc.; cf., e. g., SCOTT 1945, p. 47—48). To confine the



*Key:* $I$ = people who interact with $x$
$P$ = people who desire interaction with $x$
$i \cdot p$ = people who desire interaction with $x$ and interact with $x$

Fig. 2.2. Interaction and "pure" preference (I).

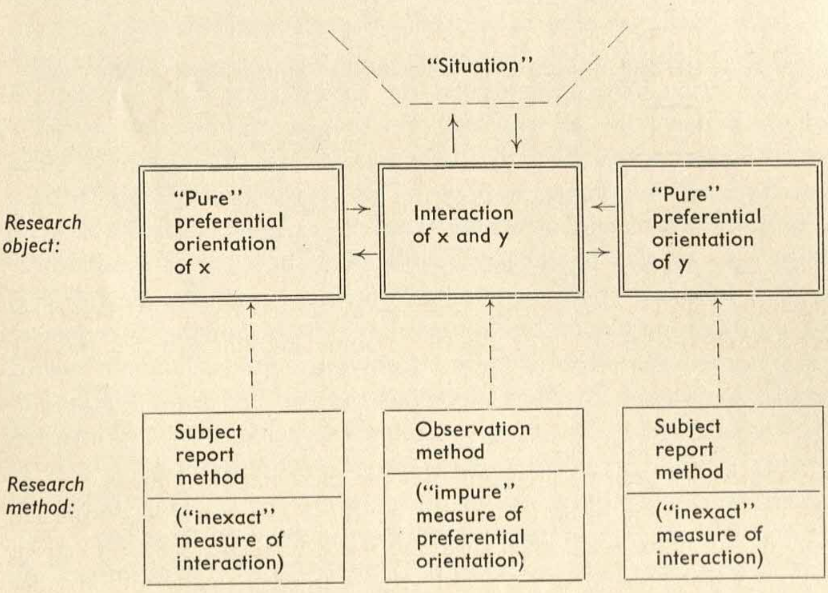

"Situation"
Research object:
"Pure" preferential orientation of x
Interaction of x and y
"Pure" preferential orientation of y
Research method:
Subject report method
("inexact" measure of interaction)
Observation method
("impure" measure of preferential orientation)
Subject report method
("inexact" measure of interaction)

Fig. 2.3. Interaction and "pure" preference (II).

investigation of human social life to observations of co-being would be to make a virtue of what in animal study is a difficult necessity. Such an undertaking is all the more dubious as human group life is probably far more complicated than that of animals, as it allows us to picture it by means of open space-time-movements to a far lesser degree. Perhaps one aspect of social development and maturity is to learn to avoid ex-

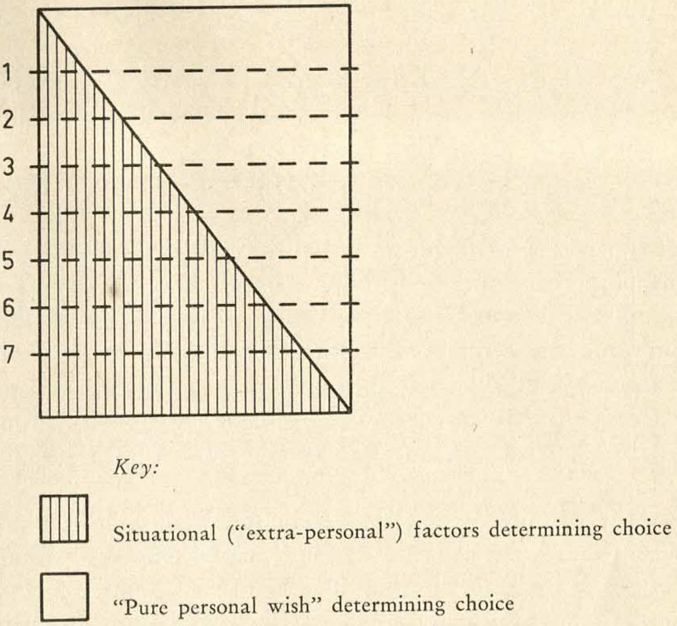

1
2
3
4
5
6
7
Key:
▥ Situational ("extra-personal") factors determining choice
□ "Pure personal wish" determining choice

Fig. 2.4. Choices and different levels of "reality".

pressing hate and love so openly and — in the words of Moreno — to reject and choose an object or a person without moving (1937 b, p. 209).

### B. *Levels of "reality"*

It has sometimes been pointed out that the fact that the choices are not anonymous makes the situation more "real" (Rasmussen & Andersen 1950, p. 6) — "more real" then meaning more influenced by reflections about extra-personal factors. We could then — hypothetically and broadly — speak about a continuous sequence of different levels of "reality"[4] on which the choices may be made and graphically visualize them as compounds of different degrees of "pure" preference and extra-personal "reality" (cf. Figure 2.4):

(1) Anonymous, written choice — nearly "pure" wish ("ideality" case).

(2) Non-anonymous, written choice — the wish perhaps conflicts with

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[4] The concept of "reality level" has been discussed in psychology by the Lewin school among others (cf. Lewin 1935, p. 103).

some estimation of the value of the ego in the eyes of the chosen ("corrected ideality").

(3) Non-anonymous, written choice with practical consequences, whereby perhaps the "correction" is somewhat greater (cf. below).

(4) The spoken choice in a personal interview.

(5) Non-verbal behavior in a hypothetical situation (e. g., as in role playing).

(6) Non-verbal behavior in a non-hypothetical situation — the individuals gather together in groups. In this case the wish of the single individual is relevant, it is true, but it is very often influenced by the situation and the actual possibilities of belonging to a certain group (cf. the example about *A* and *B* above).

(7) Groups are formed from the outside (e. g., work groups of pupils formed by the teacher). In this case the wish of the pupil need not be relevant.

Completely "pure" cases (completely "pure" wish and completely "pure" non-wish) most often fall outside the frame of empirical situations as fictional, but scale-building limits. It may be of some interest to compare choice methods 1—6 empirically and observe differences and similarities; at present we do not know if this rank order is correct: in certain cases we may perhaps find the same result on different levels, in other cases different results. (An important analysis of different levels of response is given by BORGATTA, 1951 b, with respect to frustration reactions and the ROSENZWEIG test). It is important to note that *all* choice situations may be psychologically interesting; there is no reason to reject some of them *a priori.*

## 2. Interaction Vector and Interaction-Vector Report: Effect Methods and No-Effect Methods of Ensuring Correspondence between Choice Wish and Choice-Wish Report

If it is clear that choice wishes and open interaction are different kinds of data, both important, there is still the problem of the correspondence between choice wish and choice-wish report. Of course, some subjects may give a false report.[5] What can be done to diminish the occurrence of non-correspondence?

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[5] It may be observed, however, that this falsification is not confined to a verbal report only; the non-verbal behavior in an interaction situation may be censored in a similar way. It may even happen, as has often been reported, that rejection may be more

Two ways seem possible: (1) to ensure a strong motivation for a true and real preference report, and (2) to avoid situational or motivational disturbances leading to report distortion. The problem is, that these two methods are sometimes difficult to use at the same time. We often have to ask ourselves whether to make — in FESTINGER's words — "the experimental situation *cognitively experimental* or *cognitively real* for the subject. If the experiment is cognitively real, it will be easier to make it motivationally strong. On the other hand, if the situation is cognitively experimental, it will be easier to set up with an adequate amount of control and precision." (1953, p. 154; the italics are our own).

### A. *The effect method: A cognitively real choice situation*

MORENO has been an eager spokesman for making the situation strongly motivated by promising the subjects that their choices will be *utilized* in reconstructing the group. There will be a positive and immediate choice effect. "The individual is caught by an emotional interest for a certain practical end *he* wishes to realize and upon his knowledge that the tester has the authority to put this into practice" (1934, p. 14). *"The organism in the field becomes the actor in situ"* is a vivid formulation of the "rule of adequate motivation" (1948, p. 133). The research worker is no longer a "scientific spy" but an "auxiliary ego" (1937 b, p. 210).

Looking at our sample of one hundred sociopreferential investigations (the S-Sample), we see, however, that there are few reports of utilizing choices for reconstructing groups. In fact, only in 11 % of the investigations is reconstruction explicitly referred to, whereas in 72 % reconstruction is neither promised in the instructions, nor effectuated (the remaining 17 % leave us in doubt as to the present issue). Moreover, in many cases a utilization of choice wishes is impossible from the very beginning, the aspects being of such types that they cannot be used for this purpose. Thus, in 67 % of the S-Sample investigations, one or more aspects could not possibly serve as a basis for reconstructing; in 39 % of them, *no* aspects could be so used.

What kinds of choice aspects are not suited for reconstruction? Two different categories are immediately obvious. In the first of these cases (the question with too strong "ifs") the subject is instructed to choose with

easily expressed verbally and that short-sample studies of non-verbal behavior are inferior to verbal reports as a basis for prediction (cf., e. g., MURPHY, MURPHY, & NEWCOMB 1937, p. 912; FRENKEL-BRUNSWIK & HAVEL 1953, p. 91—92; RILEY, COHN, TOBY, & RILEY, 1954, p. 716).

respect to a situation, which will not very probably take place ("Suppose you were to move to another classroom, which boys and girls from this classroom would you like best to go with you", "If it were possible to keep in touch with only three students after you leave college, which three would you choose?"). In both examples mentioned the situations are possible, but still they have no immediate reality, and no regrouping is expected. In the second case (the question with no "ifs") the report is not concerned with *interaction wishes*, but rather with past or present *interaction facts* ("What guys do you usually go to a show, drink beer or play cards with?", "With whom do you spend most time in getting work done?"). Probably reported interaction facts give us a certain idea of interaction wishes, but clearly they cannot disclose the conflict between hidden and open structure (cf. MORENO 1953, p. 719) and, thus, they are not suited for reconstructing purposes.[6]

### B. *The no-effect method: A cognitively experimental choice situation*

What, then, are the reasons why investigators so often deviate from the "rule of adequate motivation" either by using aspects not suited for regrouping (like those discussed) or by neglecting regrouping in the case of aspects which could have been used for reconstruction purposes? Four possible reasons will be mentioned in brief.

The most obvious reason is the *practical difficulties* involved, especially in investigations *using a great number of subjects*. What is possible in one or a few school classes, where the teacher is the experimenter or is in close co-operation with the experimenter, is difficult in larger samples and often demands more time and interest from the organization under study than can usually be expected.

Another reason seems to be the fact that most research workers have the impression that *empirical differences* between the investigations with and without choice utilization are *negligible*. Although MORENO, as mentioned, is most interested in the objective of transforming an untherapeutic into a therapeutic community (1954, p. 187), research without choice utilization may, according to him, also be defended. The trend away from regrouping as a primary purpose was supported by him "for a good reason: sociometric statisticians had found that there is a significant relationship between real and near-sociometric tests" (*ibid.*, p. 188). Of course, much more research is needed — some contributions will be given below — but on the whole the burden of demonstration now seems to rest with those claiming that only a situation with promise of choice utilization can disclose social preferences.

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[6] Several kinds of aspects, in addition to the two types mentioned, are unsuitable for regrouping: e. g., many personal and semi-personal aspects (the very fact of a non-formalized situation makes the regrouping procedure often superfluous or without meaning). Different types of prestige choices (choices of class president, representatives of the dormitory, etc.) may be utilized for selection purposes, but not for total regroupings.

The utilization procedure may sometimes mean the addition of disturbing variables, making the choices less exact reflectors of "pure" preferences. There often seems to be a risk of *report-distortion* due to irrelevant influences *in the now-situation*. When the pupils expect choice utilization, their teacher has to see their choices and their classmates may perhaps guess them. As HÖHN & SCHICK (1954, p. 12) remark: "Ein bestimmter 'braver' und serviler Typus hütet sich, einen ihm sympathischen Kameraden hervorzuheben, wenn er weiss, dass er vom Meister oder Lehrer nicht geschätzt wird und vice versa!" A similar distortion may be made through fear of a dominating leader pupil. It may therefore often be advantageous to make the situation *cognitively experimental*, to stress that *nothing* will happen as a result of the findings (cf. MASSARIK, TANNENBAUM, KAHANE, & WESCHLER 1953, p. 217). If there is no need for report-distortion the subject is likely to give a true answer: that is, after all, most natural and least laborious.

Similarly, choice utilization may sometimes mean a risk of *report-distortion* due to irrelevant influences *during a retest series*. As a rule every wish cannot be satisfied in regrouping, and therefore some relations are given an empirical test, whereas others are not — all of which may influence the future preferences in an inconsistent way. In one investigation (JOHANNESSON 1954, p. 131—132), school children could choose classmates whose company they preferred in an orientation exercise. In the first choice situation there were several intersexual choices. Whilst the teachers tried to grant the choice wishes as a general principle, intersexual choices were not granted. In later choice situations, then, these intersexual choices disappeared. If all the choices had been granted, or if no choices had been granted, no disturbing variable would have been introduced, and retest changes could have been interpreted as preferential instabilities. As it was, the changes were due to the extraneous influence — the *half-way realization* (cf. BJERSTEDT 1955 b). In this case of intersexual choices, the extraneous influence was very clear, and the experimenter therefore interpreted the results accordingly. In other cases, the extraneous influence is more difficult to trace. As a rule all the choice wishes cannot be fulfilled. Thus, most choice utilization experiments are half-way realizations, where the reader is usually left without information about the principles of realization as well as about the percentages of realization and non-realization. This non-observation of the dangers of half-way realization in retest series may have influenced many investigations in a non-predictable way.

Briefly then, because of various facts it often seems more advantageous to make the choice situations *cognitively experimental* than cognitively real, especially when dealing with larger populations, and when studying retest changes. On the other hand, in so far as we are more interested in preference orientations than in actual interaction and in preference orientations to real rather than to unreal situations, it usually seems best to use *aspects that it is possible to use for reconstruction.* However, we see a continued need for research comparing different types of aspects, investigating both the significance of reconstruction for the subject and his future preferences, and his reaction to retesting in no-effect situations.

In defining the preference effect, it is important to assure the subject that his report will not be shown to other group-members. Even in this respect the situational definition is of a negative character: there will be no effect. Questionnaires are filled up privately.

## VII. PREFERENCE AREA

The definition of the preference area (the limits of the group from which to choose) is important, but usually does not cause more difficult problems. Sometimes the kind of preference aspect is already a clear indication: this is often the case with formalized aspects, but more seldom so with personal and semi-personal aspects.

As a rule the preference area is limited to whole or part of the sample directly questioned: i. e., the category of chosen is usually identical with, or less than, the category of choosers. In our S-Sample 79 % of the investigations were of this kind. It is more seldom that the subjects are allowed to choose outside the groups under direct study, since such choices cannot be analyzed in the usual way (we do not know anything about reciprocations, etc.). Although outside preferences may be of some use in sample studies of larger communities, research workers seem to show a decreasing interest in this type of study (34 % in the SA-Sample against 8 % in the SB-Sample).

## VIII. PREFERENCE SIGN

In a simple preference situation, the subject may be instructed to indicate which is the most preferred item and which is the least preferred item, i. e., to make a judgment such as "Among these items I like *A* most and *Z* least". We may then say that he gives *A* a *pro-sign* or positive choice, and *Z* an *anti-sign* or negative choice.

The use of positive choices has been of primary interest from the beginning. But there has been considerable discussion about whether to use rejection reports or not.

### 1. Reasons against Rejection Reports

Several reasons against the use of rejection reports may be given. In his first classroom study, MORENO did not use negative choices (1934, p. 13), and obviously questions on whom one would choose last seem somewhat *artificial*, "in so far as most people are not actively interested in those with whom they do *not* associate" (NORTHWAY 1952, p. 5). Indeed, it has been said that they are not only artificial, but also likely to *evoke resistance and resentment*. Whether this *rejection resistance* is possibly rooted in a basic anxiety about incurring rejection as a punishment, is a difficult problem. The fact is clear: in our cultural tradition the aversion to admitting negative feelings is widespread (Thou shalt love thy neighbor as thyself), and it usually results in a heavy positive report overweight and zero-norm rejection distributions (*J*-curves; cf. ALLPORT 1934).[7] "I think it very unfair to deliberately dig out of my mind three people that I don't like especially," is the comment of a subject refusing to give a rejection report (LUNDBERG, HERTZLER, & DICKSON 1949, p. 164). Another subject even considers this kind of investigation *harmful*: "I think questions like this encourage intolerance" (*ibid.*). Several investigators have given similar opinions: does not the use of rejection reports mean calling attention to the less-favored children, thereby fostering discrimination and rendering the process of readjustment more difficult (cf., e. g., BRONFENBRENNER 1944 a, p. 43).

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[7] Cultural differences may be expected. DANIELSSON (1949) reports from a study among Jibaro Indians in Western Amazonas that people were very outspoken about their relations to each other and that repulsions turned out to be even easier to discover than the attractions. The head of the family often began the day with "a loud and fierce recitation of the names of enemies, so that the family members may not forget them" (p. 89).

### 2. Reasons in Favor of Rejection Reports

However, several reasons in favor of rejection reports may also be given. First and foremost, they furnish important additional material for *individual-directed diagnosis* (cf., e. g., BRONFENBRENNER 1944 a, p. 71; NORTHWAY 1944). JENNINGS' important findings "sustain a premise that the negative aspect of choice merits equal consideration with the positive" (1950, p. 21). It is important also for *group-directed diagnosis*, since it discovers group disruption potentials and gives us an operational measure of group tension (SMUCKER 1947). Awareness of one's own and others' rejections are not necessarily harmful; in fact, a realistic social perception is an important basis for a rational attack on the problem and thus for every *individual-directed therapy*. "Much psychotherapy undoubtedly consists of trying to objectify these suppressed dislikes by bringing them to the verbal level where they can be rationally dealt with" (LUNDBERG, HERTZLER, & DICKSON 1949, p. 165). Unrealistic pathological "autosociograms" are a hindrance to effective adjustment (MORENO 1954). Reconstruction of groups is more effective when attention is also given to the negative aspect, both when trying to find the most kind and rejection-free atmosphere for an isolated individual, and when aiming primarily at *group-directed therapy* to prevent conflicts and disruptions in general (cf. MORENO 1934, p. 298 et seq.; 1953, p. 500 et seq.).

### 3. Methodological Trends

In view of these or similar pros and cons with respect to the use of rejection reports, how have research workers reacted, i. e., *to what degree are negative choices used in empirical investigations*? From an analysis of the S-Sample (cf. Table 2.2), we see that exactly one half of the investigations use positive choices only, whereas the other half, besides positive choice reports, also use negative choice reports of one kind or another. More interesting is, however, the clear difference in preference sign emphasis between earlier and later investigations. Whereas the $S_I$-Sample contains 67 % investigations without rejection reports, the corresponding figure for the $S_{II}$-Sample is 48 % and for the $S_{III}$-Sample 35 %.

### 4. Methods of Lessening Resistance and Preventing Harmful Consequences

Obviously, then, several reasons speak in favor of including negative data, and empirical workers seem more and more interested in rejection

Table 2.2. Preference Sign in Different Sociopreferential Investigations (The S-Sample from "*Sociometry*")

| Preference sign | Number of investigations in different samples | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | SA | | SB | | $S_I$ | | $S_{II}$ | | $S_{III}$ | | Total S |
| | *N* | % | *N* | % | *N* | % | *N* | % | *N* | % | *N* & % |
| positive only | 30 | 60 | 20 | 40 | 22 | 67 | 16 | 48 | 12 | 35 | 50 |
| positive & negative | 20 | 40 | 30 | 60 | 11 | 33 | 17 | 52 | 22 | 65 | 50 |
| Total number of investigations | 50 | | 50 | | 33 | | 33 | | 34 | | 100 |

analysis. In view of the objections mentioned, however, it seems important to find *methods of lessening resistance and preventing possible harmful consequences.* Absolute *privacy* and *confidentiality* of reports must, of course, not only be promised but also be strictly observed. *Anonymity* of choosers has sometimes been recommended, but since the possibilities of analyzing data are then substantially reduced, and since even in such cases subjects are reluctant to give negative reports (cf., e. g., YOUNG 1947, p. 173; LUNDBERG, HERTZLER, & DICKSON 1949, p. 164), this does not seem to be a very useful procedure. It seems important to *avoid forced choices and a definite choice number*; to demand three rejections, for example, seems clearly wrong. The subject ought to give negative choices or abstain from doing so of his own free will. In certain preference methods (such as rank order, pair comparison, etc., to be discussed below), the rejection is not so obvious to the subject, and they may therefore be useful in certain connections. It seems especially important to *avoid rejection reports* as far as possible *in the case of personal aspects.* In formalized aspects, where the choosing or rejecting is confined to a specific situation, the resistance is usually much less. It may also be relevant to stress that the preference judgment does not mean an acceptance or a rejection of the person *in toto*, that only one of the person's many roles is evaluated in a very specific connection — e. g., the role of being co-worker in the specific connection: together with me. Of course, we cannot totally eliminate the resistance; the main thing seems to be to reduce the emotionality about a rejection by focusing its meaning on a *specific* evaluation; for the rest, the resistance is an interesting sociopsychological fact, and it may be of importance to observe what factors maximize and minimize it. Even if the importance of rejection reports for the scientist is often great, we may however support the opinion that they should usually be omitted in routine tests in non-scientific connections (NORTHWAY 1952, p. 5).

Some intercultural differences with respect to resistance against rejection reports may be a result of more *general* intercultural differences — differences concerning flexibility of evaluation for situationally different roles. On the whole, there seems to have been more resistance against preferential reports in Europe than in the U. S. A. If we dare to step on to the insecure ground of international comparisons at all, it may be tempting in this connection to refer to the interesting analysis of sociopsychological differences between the U. S. A. and Germany made by LEWIN (1936 b). *Ceteris paribus*, the so-called *U*-type (a hypothetical personality model according to LEWIN regarded as typically American) is described as showing less resistance than the *G*-type (another hypothetical personality model regarded as typically German) against communication from another person in non-intimate situations. In the Lewinian language, this is given the following spatial symbolization: the *U*-type has more peripheral regions with easily permeable boundaries. This means — still according to LEWIN — *inter alia*: (a) The *U*-type can have relatively close relations with other people without a deep personal friendship and without danger of personal friction. (b) Since, among individuals of the same social group, the peripheral regions are more similar than the central regions, a group of *U*-types is more homogeneous than a group of *G*-types. (c) As the *U*-type has more easily accessible layers, on the average, more layers of the *U*-type than of the *G*-type will be influenced by a change of the situation. With respect to the sociometric preference situation we may venture certain tentative derivations that are closely related to these general deductions: (1) The inter-aspectual choice variability will be greater for the *U*-type than for the *G*-type. In this connection it may be interesting to observe that American "sociometry" has greatly concerned itself with using a multiplicity of preference aspects, whereas German social psychology has more often been content with one relatively unspecified single-aspect ranking situation. (2) The *U*-type is less likely to react emotionally to a choice situation, keeping his reactions more specific, i. e., within more peripheral layers, whereas the *G*-type will often treat formalized aspects *as if* they were personal. In so far as we try to match the hypothetical personality models *U* and *G* with the typical American and the typical German, we reach only tentative generalizations which it is difficult to submit to empirical tests. Be this as it may, it may nevertheless be of some interest to see a very specific phenomenon — such as the reaction of scholars towards a new sociopsychological research technique — within a wider hypothetical frame of reference.

## IX. PREFERENCE METHOD

### 1. *K*-Choice Request *v.* Unlimited Choice

In the pioneer investigations, reported in "Who Shall Survive?", MORENO (1934, p. 13—14) instructed the subjects to give a specified number of choices (thus using what we shall call here a *k-choice request* or the "*Pick k*" *method*).[8] In the classroom situations he used a two-choice request

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[8] The terms "Pick *k*" and "Order *k*" may be found in more general discussions of measurement theory (COOMBS 1953, p. 498 et seq.). — A question to be mentioned only in passing in this connection is how the "picking" is done. Most usual is simple name-writing, but sometimes the subjects check name-lists or numbers on answer slips (cf., e. g.,

("Pick 2"); in the Training School home groups, a five-choice request ("Pick 5"). Theoretically any number might be used from "Pick 1" up to "Pick *n*-1". In our sample of empirical sociopreferential investigations (the S-Sample) we also find a great variety of numbers, the most usual, however, being, in order of frequency, "Pick 3", "Pick 5", and "Pick 2". In addition to the influence of research traditions, the number of choices requested depends on the number of subjects within the preference area and the number of preference aspects used simultaneously; usually the experimenter's decision about choice number does not raise more difficult problems. Another question, however, which has caused differences of opinion, is whether *k-choice requests* should not be replaced by *unlimited choice possibilities.*

### A. *Reasons in favor of the k-choice request*

Defenders of the *k*-choice request may give several reasons for their position. The *data collection* is quick and easy, as the subjects do not have to make any decision about how many to choose. The statistical *data analysis* is simplified: scores based on chance expectancy are more difficult both to work out and to interpret when starting from unlimited choice possibilities (cf., e. g., BRONFENBRENNER 1944 a, p. 67; NORTHWAY 1952, p. 3). Last but not least, *empirical status scores* worked out from the two different primary methods usually *show very small differences* (different choice aspects may give slightly different results). Those who are attraction centers in the first choices, still receive most votes if the choice possibilities are extended — a fact described by MORENO in terms of the "sociodynamic effect" (1934, p. 74—75; cf. JENNINGS 1950, p. 18). JOHANNESSON (1954, p. 108) compared status scores based on unlimited choices and status scores based on a post-experimental three-choice limit on four occasions in four elementary school classes; out of the sixteen correlation coefficients, ranging from .65 to .97, ten were above .90.

BONNEY & FESSENDEN 1955), and sometimes a photo-sorting procedure is employed. Advantages of number-checking are quickness of data gathering and ease of matrix recording; disadvantages are the increased possibilities of errors. An advantage of photo-sorting is that the procedure is independent of name recollection; a disadvantage is the danger that the pupil's appearance will gain increased importance and that irrelevant photographic factors will play part in the preferences (cf. the disturbing role photographic factors play in the Szondi Test, STRÓBL 1955). When the pupils know each other by name sufficiently well, the name-writing procedure seems to be the most simple and efficient procedure. Whatever the procedure employed, however, it is important to report it explicitly, as differences of procedure may effect the results obtained.

### B. *Reasons against the k-choice request*

Defenders of the unlimited choice situation do not lack counter-arguments. "The point of transition from being a mere acquaintance to becoming an emotional partner in a social atom" is pointed out by MORENO (1951, p. 59) as theoretically significant, this "definite line of demarcation" being termed the "*social threshold*" (*ibid.*). With a *k*-choice request, we have no possibility of determining the position of this threshold. It may be true that differences in status rank will be negligible; nevertheless, as soon as we want to make a further exploration of structure, we find the definite choice number being a difficult hindrance, a Procrustean bed, in which the socially expansive has to conceal some of his social contacts, and in which the restrictive individual is forced to give artificial preference reports. We cannot make any statements about *social expansivity*, and we cannot talk about *social isolation* in more than a very relative sense: although a subject has not received any choices in a two-choice request, there is nothing to preclude his being chosen in a three-choice request. On the basis of this and similar considerations, MORENO himself has joined the defenders of the unlimited choice situation, and JENNINGS in her fundamental work on leadership and isolation stresses the importance of the individual's spontaneous choice expression (MORENO, JENNINGS, & SARGENT 1940; JENNINGS 1950).

### C. *Methodological trends*

From this discussion it does not seem possible to draw definite general conclusions: the different methods have different kinds of advantages and are therefore suited to different kinds of research situations. In the S-Sample, 70 % of the investigations use either a limited choice situation only or an unlimited choice situation only, both types being found more or less equally often (34 % and 36 % respectively). However, when we compare earlier and later investigations we see a clear difference in emphasis: unlimited choice possibilities being used in 24 % of the SA-Sample and in 48 % of the SB-Sample (cf. Table 2.3). Research workers seem to be more and more aware of the richer possibilities of exploration when using unlimited choices.

### D. *Four types of choice limitation*

In the discussion above we have as a rule preferred the term "*k*-choice request" to the term "limited choice", since the latter term is somewhat

Table 2.3. Preference Method in Different Sociopreferential Investigations
(The S-Sample from "*Sociometry*")

| Preference method | Number of investigations in different samples | | | | |
|---|---|---|---|---|---|
| | SA | | SB | | Total S |
| | *N* | % | *N* | % | *N* & % |
| limited choice | 24 | *48* | 10 | *20* | *34* |
| unlimited choice | 12 | *24* | 24 | *48* | *36* |
| other methods | 5 | *10* | 6 | *12* | *11* |
| different methods in the same investigation | 9 | *18* | 10 | *20* | *19* |

ambiguous. In fact, we may distinguish between four types of choice limitation which we may term simply "the maximum limit", "the minimum limit", "the maximum-minimum limit" and the "circa limit". When using the maximum-minimum limit a specified number of choices is asked for, i. e., we deal with the *k*-choice request, the most usual method, which gives no place for variations in expansivity. The *maximum limit* (or "*ceiling limit*") requests a specified number or less. The *minimum limit* (or "*floor limit*") requests a specified number or more. In many cases it may be of considerable use to give the subjects a point of reference for the expected choice output and to allow him to vary from this point in one direction or other. In some situations, the experimenter may feel that the deviations in the downward direction are most interesting; he may then use a ceiling limit. In other situations the deviations in the upward direction seem more important: then a floor limit may be appropriate. A further possibility may be to use a *circa limit*, specifying a choice number, but allowing variations in both directions. These different types of limitations are used sporadically by different investigators, but they are usually not mentioned in methodological surveys. They seem, however, to be important modifications, combining certain advantages of the strict *k*-choice request with certain advantages of the unlimited choice possibilities.

## 2. "Pick *k*" *v.* "Order *k*". — Describing Preference Levels

The simple *k*-choice request may be modified by instructing the subject to give his choices in order of preference: "*Order k*". A similar instruction may be given in the case of unlimited choices.

In the "Pick *k*" procedure, each choice must be considered as equally important. This is clearly an arbitrary decision, probably distorting real differences in preferential intensity. The "Order *k*" procedure gives us more structured information. When scoring "Order *k*" choices, different weights are usually given to different levels of preference. In this case, the experimenter has to make new decisions, which may also be criticized as arbitrary (cf. NORTHWAY 1952, p. 14). These difficulties will be discussed further in the chapter concerning secondary methods and will also be commented upon in connection with certain results of this investigation.

Some primary methods try to relieve the experimenter of the problem of weight-giving by *instructing the subjects to give weights* according to some *reference measure.* Such a measure may be the time an individual wishes to be together with another individual (MORENO, JENNINGS, & SARGENT 1940).[9] This is an interesting approach. However, as the assumption that the reference measure has a constant meaning to different individuals is often false (cf., e. g., GOTTHEIL 1952), and as the time-giving may make the procedure more complicated and less realistic to the subjects (especially with formalized aspects), it cannot be generally recommended, before more empirical research has been done on it.

### 3. Choice Limit and Unlimited Choice *v.* Rank Order

"Order *k*" may be varied from "Order 2" up to "Order *n*-1". The latter obviously corresponds to what is usually termed the *method of rank order*, whereas other variants of "Order *k*" may be regarded as *partial ranks.* Using the method of rank order, the subjects are instructed to name all the members of the preference area in order of preference (with respect to the preference aspect studied).

Whilst "Pick *k*", "Order *k*", and unlimited choices with or without preferential ranking are the most usual methods in American preferential sociometry, the method of rank order has been favored in European sociopsychological research into leadership hierarchies. In order to reproduce among humans certain ideas in SCHJELDERUP-EBBE's (1922) famous "peck-order" experiments, DAVID KATZ (1922) in Rostock instructed schoolchildren to give ranking lists of the other pupils with respect to their "allgemeine Tüchtigkeit", and REININGER (1924) with respect to their leadership ability. Both were impressed with the similarities between individual rankings. VEČERKA (1926), NAFFIN (1933), KAILA (1935), KOSKENNIEMI (1936, 1938), GÄSTRIN (1938), TUOMPO (1942, 1952), FIEANDT (1946), PÄIVÄNSALO (1948, 1952), JOHANNESSON (1954), and others have followed up this lead, usually studying leadership preferences.

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[9] Sometimes the subjects have been instructed to report how much time they *usually* spend together with another person (DEUTSCHBERGER 1946). Such statements mirror above all interaction facts and not interaction wishes, and are thus not directly comparable (cf. the section on "preference effect" above).

Some of the investigations in this field are rather uninteresting reproductions applied to very few subjects without methodological and theoretical sophistication; others are very interesting. Especially important seems JOHANNESSON's intention to compare the different approaches of the two research traditions (the MORENO tradition and the KATZ-REININGER tradition) with more care than has hitherto been given to the subject. In JOHANNESSON's investigations, choices of group members (workmates, seating companions, etc.) were compared with choices of leaders, the former being investigated with traditional sociopreferential methods (*k*-choice requests or unlimited choice possibilities) and the latter with the ranking technique. From his data, we get the general impression that we obtain fairly similar results with different preference methods and even that different methods *together with* different preference aspects do not make the correlations insignificant.

Not only are aspects and method different in the two research traditions, but so also is the stress on preference effect. Very often the ranking experiments have dealt with fairly improbable situations (cf., e. g., GÄSTRIN 1938, p. 9, who made the assumption that all the pupils in the class had been wrecked on an uninhabited island and therefore needed a leader to supervise the discipline). However, some investigators have used voting situations of direct realistic meaning in the group (e. g., VEČERKA 1926, JOHANNESSON 1954).

In "*Sociometry*" there have been several investigations of prestige choosing (choices of leaders, representatives, the most influential people, etc.): for example, BONNEY 1946, YOUNG 1947, STEWART 1947, SMUCKER 1947, GROSSMAN & WRIGHTER 1948, LOOMIS & POWELL 1949, KIDD 1951, MILL 1953, ENG 1954, LEVI, TORRANCE, & PLETTS 1954. There have also been some studies using the method of rank order: for instance, ENG & FRENCH 1948, BOCK & HUSAIN 1952, BATES 1952, CAHN 1952. However, there has been no tendency to connect prestige aspects with rank order methods as in the European tradition.

Use of the complete rank order method has certain advantages over the methods discussed above. It gives us more detailed information, as the individual is forced to give his reactions to every member of the preference area, and the transition to rejection reports is less abrupt and therefore less shocking. But there are also disadvantages. It has been found that the placing of the largest part of the subjects — those who belong neither to the top nor to the bottom level — is highly inconsistent (KOSKENNIEMI 1938, p. 8). KOSKENNIEMI therefore considers it useless to undertake total rankings (this procedure is even termed "primitive"; *ibid.*, p. 9). Among the European investigators in this field, several have therefore used partial ranks — the two first positions and the last position (LEIB 1928, BUTTGEREIT 1932), the upper and lower quarter (KOSKENNIEMI 1936, 1938: "Viertelmethode"), or otherwise a specified number of preferences (ROMBACH 1928). It is possible that in investigations with total ranks, an attempt is made to measure something that does not exist: clearly specified and ordered attitudes towards all the pupils in the class. As soon as we alter our method in the ways just described we are, however, back to the more usual sociopreferential methods of the "Order *k*" type.

## 4. Other Methods

It is noticeable that there is a certain lack of systematic investigation concerning different preference methods, perhaps due to the deceptive simplicity of the procedure, tempting research workers to apply them immediately without thought for methodological and theoretical discussions. Thus, American "sociometrists" have as a rule been unfamiliar with European rank order experiments; moreover, many workers in this field, both of the MORENO school and in the European ranking experiment tradition, seem to have worked with a favored method as if it were quite unrelated to scaling methods in traditional psychology, not being aware of possibilities of methodological variation in the primary preference situation.

If we are interested in *preferential* sociometry, it seems relevant to look at a field in psychology where preferential analysis has been the main interest for a long time: the field of experimental aesthetics. The four most usual methods in this area, all of which were introduced even before 1900, seem to be: (a) "*Die Wahlmethode*" (FECHNER 1871): a number of stimuli are presented simultaneously, and the subject chooses the one he likes the most; (b) "*Paarweise Vergleichung*" (FECHNER 1871, WITMER 1894, COHN 1894): the stimuli are presented in pairs, and the subject chooses the stimulus he prefers in each pair; (c) *The Rank Order Method* (WITMER 1894): the subject evaluates stimuli by arranging them in order of preference; (d) *Rating Scale Method* (MAJOR 1895: the "method of isolated exposure"): the subject is given one stimulus at a time and evaluates this with respect to a certain scale of values (for instance, a 7-step scale). In MARTIN 1906 we meet the method under the name of the "serial method", in which the subject gives a judgment of $P =$ pleasant, $U =$ unpleasant, or $D =$ doubtful for each stimulus. — "Die Wahlmethode" apparently corresponds to what has been called here the *k*-choice request. The rank order method has already been discussed. In the following paragraphs some consideration will be given to the other two methods and to some related procedures.

### A. *The method of successive categories (total rating)*

"Total rating" (describable also as the "*method of successive categories*") is used from time to time. In its most simple form it consists of the subject's judgment on how he feels about interacting with every other individual within the preference area with respect to the activity studied, in terms of "Yes", "No", or "Indifferent" (JACOBS 1945, ZELENY 1947, MCKINNEY 1948). Friendship ratings are often given in 4-step (MAISONNEUVE 1954), 5-step (WEBER 1950, AUSUBEL 1953, SCHIFF 1954), or 6-step (SEEMAN 1946, YOUNG 1947, WARDLOW & GREENE 1952) scales. The three last references mentioned all use what is termed "The Ohio Social Acceptance Scale"; this is simply a friendship rating in the following terms: 1 — "My very, very best friends", 2 — "My other friends", 3 — "Not friends, but Okay", 4 — "Don't know them", 5 — "Don't care for them", 6 — "Dislike them". — A photo-sorting procedure is used by POLANSKY, LIPPITT, & REDL (1950) instead of the usual paper-and-pencil method. Photos of the subjects are sorted into six colored pigeon holes labelled as follows: White — "Like Best"; Red — "Like Next Best"; Orange — "Like"; Yellow — "Doesn't Matter"; Green — "Like Less"; Blue — "Like Least".

Sometimes such a total rating method has been *modelled after* BOGARDUS' *(1925) well-known social distance scale.* For semi-personal rating KOSKENNIEMI (1936, p. 191) uses a four-step scale like this: "Dieser Junge sollte (1) bei mir wohnen, (2) mit mir in demselben Hause wohnen, (3) im benachbarten Hause wohnen, (4) sich von meiner Wohnung fernhalten", and for more formalized rating a four-step scale like this: "Dieser Junge sollte (I) mein Klassennachbar und Arbeitsgenosse sein, (II) in dieselbe Arbeitsgruppe kommen, (III) in derselben Klasse bleiben, (IV) weg aus der Klasse."

The advantage of the rating procedure in comparison with the "Pick *k*" and the "Order *k*" methods is that it gives us more information and makes a less abrupt transition to rejection reports; (this latter advantage is retained even when only extreme ratings are analyzed, i. e., even if the data are treated *as if* obtained by an ordinary unlimited choice situation; cf. Johannesson, 1954, p. 68). In comparison with the total ranking its advantage is that it does not force the subject to a differentiated ranking of individuals towards whom his attitudes are about the same (the middle level in the ranking experiment is here given a middle rating). A disadvantage may be that the subjects find this procedure less realistic than spontaneous choosing.

### B. *The method of pair comparison and the method of triads*

*Pair comparison* is used only in one investigation in the whole S-Sample (Eng & French 1948). In the method of rank order and the method of total rating, each individual has to evaluate all the other individuals — and this usually means that he has *implicitly* to compare each individual with all the other individuals within the choice area. Using the method of pair comparison, this comparison is made *explicitly*. Hence this method is generally thought to give an even more rigorous determination of status and may sometimes serve as a criterion of validity for other scaling methods (Guilford 1954, p. 174). A disadvantage is that although the choice procedure is simple and natural to the subjects (choosing one out of two), the large amount of repetition is time-consuming and becomes tedious in larger groups, tempting the subjects to become careless.

The *method of triads* would for our data constitute the presentation of all possible triplets of individuals with instructions to indicate which is most preferred and which is least preferred (cf. for general description, Coombs 1953, p. 502; Guilford 1954, p. 192). As it requires much effort on the part of the judges, it is somewhat impractical for larger numbers of stimuli. There is no example of its use in the S-Sample.

## 5. Comparisons between Different Preference Methods

Comparisons between different preference methods are relatively few: Eng & French (1948) compare three methods; Taylor (1950, 1951), Ausubel, Schiff, & Casser (1952), and Witryol & Thompson (1953 a) compare two methods. As a rule, the correlations between *k*-choice requests and total ratings, total rankings, or pair comparisons are relatively low, whereas correlations between unlimited choices and total rankings, between rankings and ratings, or between rankings and pair comparisons are relatively high. Mouton, Blake, & Fruchter (1955 a) in their survey point to the fact that the limited choice technique seems to be the common factor responsible for lower correlations. As the *k*-choice request only asks for judgments on a small part of the scale, this result is not surprising. Obviously, however, there is need for further research, as only a few investigations have been made, and these have often dealt with small and specialized groups.

## X. PREFERENCE-MOTIVATION REQUEST

In his basic text from 1934 (p. 164 et seq.) MORENO wrote that the analysis of the spontaneous choices ought to be followed by an analysis of the choice motivations, and attempts at such analysis are found even in the early sociopreferential investigations in Germany (cf., e. g., REININGER 1932). Of course, most people are unable to explain the origin of their attitudes in a satisfactory way; in fact, the choice is felt by MORENO to be much more significant than the motivation. For this reason, in the large body of sociopreferential investigations published during the last twenty years, these difficulties seem to have led most investigators to avoid the problem altogether: i. e., the choices are often analyzed as behavioral facts without any attempts at investigating statements of preference motivations. However, it seems that these difficulties should be further analyzed.

Due to the complexity of both motivation and perception, it is obvious that the *Phäno-motiv* — the motive within the subject's "field of awareness" — often does not coincide with the *Geno-motiv*: the "real" motive (STERN 1950, p. 563—570). "Conscious" and "unconscious" motives may combine and express themselves in the same choice. In the subject's perceptions of his motives, we probably have to consider not only perceptual end-stages, but also liminal forms and subceptions — perceptions outside clear awareness — which may affect already established percepts, although not realized by the subject as separate facts (cf. KRAGH 1955, SMITH & HENRIKSSON 1955; cf. also the term "prehension" as used by SULLIVAN 1953, p. 76). On the other hand, the "unreal" *Phäno-motiv* may develop into a *Geno-motiv* (a "rationalizing" may become "fixated") and partly direct future behavior. Finally — and this is a problem on another level — the verbal statement may not only be an "unconscious lie", i. e., represent a self-deception, but also be a "conscious lie", i. e., be an attempt to deceive the experimenter. The present writer certainly does not pretend to deal with all these complexities in detail, and still less to disentangle them. However, an attempt will be made to show that some ways of dealing with preference motivations may be fruitful, *although* these statements cannot be considered on their face value. Psychology ought *also*

— and some would perhaps say *in the first place* — to take into account "subjective facts", subject-determined representations *and* misrepresentations of "objective facts". We may express this important point in another way by using terms from KECSKEMETI's semantic analysis (1952, p. 32): although we cannot always rely on a "*text interpretation*" of the "communicative meaning", we may perhaps make some use of a "*context interpretation*" of the "situational meaning". Regardless of whether the communications are "true" or "false", they are behavioral units of the communicator, and some interesting relation between these and other units of behavior may be found.[10]

Another question, however, is whether we are allowed to discuss such preference motivations without reference to the special choice relations which they were primarily intended to illustrate. If $x$ chooses $y$, and explains his attitude with the motivation $M_x$, and if $y$ chooses $x$, and gives the motivation $M_y$, we not only have the preferential relation $xPPy$ (in the symbolical system proposed below, $xPPy$ is used as a condensation for mutual positive choices between $x$ and $y$), but also one kind of motivational relation, which may be symbolized roughly thus: $xM_xM_yy$. If we only discuss $xM_xy$ or only $yM_yx$, we have already withdrawn one step from "reality", and when, finally, we discuss the motivations $M_x$ and $M_y$ alone, we have retreated still further. When we proceed as in the last case, we must always remember that we are dealing with fictional purifications, but in cases where we are able to achieve new insight by such a procedure, we cannot exclude it *a priori*. Thus although POLANSKY, LIPPITT, & REDL (1950) write that "a full understanding of the verbalizable reasons for choice can be gained only from a complete knowledge of the case-history of the child" (and even add, "if, indeed, it can be gained from that"), they nevertheless state it as their opinion that "considerable information may be derived from an examination on a more superficial level of the verbal responses themselves" — at least "as a first approximation" (p. 52).

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[10] Although "social values" and the processes of "norm interiorization" have been eagerly discussed (cf. the classic discussions in, e. g., PIAGET 1932, SHERIF 1936, investigations such as that of KALHORN 1944, and the more recent treatment in, e. g., PARSONS 1951, ZETTERBERG 1951, NEWCOMB 1952, ROMMETVEIT 1953, ALLPORT 1954, SARBIN 1954, PARSONS & BALES 1955), the possibility of using choice motivations for the analysis of social values as they operate in the peer group has not received sufficient attention within preferential sociometry. It is a general opinion in sociology that "the higher the rank of a person within a group, the more nearly his activities conform to the norms of the group" (HOMANS 1950, p. 141). Conversely, the motivations given for choosing high-ranking people may give us an idea of what constitute the social norms of existent or possible groups. A social norm is sometimes defined as "any symbolic behavior which can be translated into an imperative" (ZETTERBERG 1951, p. 10). Frequently this imperative demanding a specific behavior "is associated with another imperative demanding a certain punishing treatment for those who disobey and/or a certain treatment for those who obey" (*op. cit.*, p. 11). Translated into the world of preferences, the imperative "Do not perform *A*" may be related to the imperative "Reject those who do *A*" or "Give positive choices only to those who avoid doing *A*". In so far as a positive choice may be interpreted as a reward and a negative choice as a punishment for the complex of behavior mentioned in the motivations, choice motivations could be employed as "norm-tests".

Some investigations have also been made in order to classify the verbalized preference motivations (cf., e. g., THOMAS & YOUNG 1938, BONNEY 1947). Similar attempts will be made in this investigation.

## CHAPTER 3

# GENERAL PRINCIPLES FOR ANALYSIS OF SOCIO-PREFERENTIAL DATA DISCLOSED BY MEANS OF SUBJECT REPORT METHODS

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The primary sociopreferential facts (Ann wants Kate as a workmate, but Kate does not want Ann, etc.) and the corresponding primary "perceptual" data (Ann is aware of Kate's rejection, but Kate is not aware of Ann's positive attitude, etc.) have to undergo a process of combination and compression in order to be useful scientifically. The principal methods to be employed in the present investigation are discussed in this chapter under the following three headings: (a) verbal condensation, (b) pictorial condensation, and (c) numerical condensation.

## I. SCIENTIFIC COMMUNICATION VEHICLES IN PREFERENTIAL SOCIOMETRY AS "DATA COMPRESSORS": INTRODUCTORY PRINCIPLES FOR AN EVALUATION OF METHODOLOGICAL DEVELOPMENTS

When we are confronted with the multiplying array of terminologies, diagrammatic techniques, and statistical characteristics, developed to describe sociopreferential data, we are forced to make a selection. In order to choose most aptly as well as make appropriate innovations, we must have some guiding criterion. In this section some problems of scientific communication will be briefly discussed, and we shall raise the question of whether we may propose norms for evaluating different kinds of vehicles of communication within preferential sociometry.

Schematically we may distinguish between two main levels of discourse: *testproximal and testdistal.* The immediate description of the subject's reactions in a test-situation may be said to represent a *primary test-proximal level*: we are close to the *hic et nunc* of the action *in situ.* When the immediate reactions of the subjects are combined in one way or another, our description moves into a *secondary test-proximal level*: we want to compress our primary data in graphic representation, in statistical treatment, or in logical categorization in a way which gives both detail and survey, but we still do not want to add any interpretation. Lastly, the *testdistal* level of description is reached when we "translate" our primary and secondary data into a more general language. This translation process is sometimes difficult: we may generalize too hastily, if we do not observe the "*translation rules*" and the necessary *suppositions for translation*, some of which are conventionally discussed in terms of "validity" and "reliability". Our description has then moved from "pointilism" through "condensation" to "generalization".

*One* important aim for the poet is, according to several aesthetes, to amass a rich content in few words. To do this he uses metaphors, linguistic neologisms, etc. — what we could call "poetic communication vehicles". These have sometimes been evaluated with respect to the degree with which they have succeeded in combining richness with wholeness, analysis with synthesis (cf., e. g., HANS LARSSON 1919). In fact, a similar norm of evaluation might be made with respect to scientific communication. One of the most important tasks would then seem to be to try to find vehicles which are suitable for compressing the analytic data into a synthetic picture without leaving the firm ground of precision. This criterion — which we might call preliminarily the *analysis-synthesis criterion* — may be applied at both the secondary testproximal and the testdistal level of discourse.

Hence, when confronted with scientific communication vehicles — they may be terms, diagrammatic representations, statistical characteristics, or theoretical models — we may assess them with respect to the analysis-synthesis criterion, i. e., evaluate them pragmatically in their role as "*data-compressors*". Are they useful for their purpose, or do they represent *too low a degree of compression* (leaving us without the synthetic picture) or perhaps *too high a degree of compression* (leaving us, e. g., with a synthesis which has been too greatly reduced as to details)? The bald presentation of series of irregularly changing retest measurements in a table may often be unsurveyable and represent too low a degree of compression, whilst an average of this series could represent too high a degree of compression. In this simple example a graphical curve or some statistical index of developmental tendency would be a more adequate "descriptional model".

The importance of condensation by means of symbols and abstract models has been emphasized by some authors. CASSIRER (1929, p. 451) finds it characteristic of symbolic thought, "dass es nicht mit den Denkinhalten selber operiert, sondern jedem Denkinhalt ein bestimmtes Zeichen zuordnet, und dass es kraft dieser Zuordnung eine Verdichtung erreicht, durch welche es möglich wird, alle Glieder einer komplexen Beweiskette in eine einzige Formel zu konzentrieren, und sie mit einem Blick, als eine gegliederte Gesamtheit, zu umfassen". ROSENBLUETH & WIENER (1945), find that the meaning of abstraction in science consists in replacing the universe under consideration by a "model of similar but simpler structure" (p. 316) in order to make it surveyable to the finite human mind.

What is to be regarded as *sub-compression* and *super-compression* in the single case depends on the total communicative situation: the situation to be communicated, the sender of the communication and the receiver of the communication. It must be observed that even in the communication of scientist to scientist, in which exactness seems to be self-evident, the choice of some *level of precision* is not so simple as the choice of the highest possible degree of accuracy. A high degree of precision (differentiation) often means the lack of an overall survey and a complete general picture (cf., e. g., REGNÉLL 1949, p. 21). — What we need in a specific scientific situation is a clear conception of existing (or possible) vehicles, and of their advantages and disadvantages with respect to exactness and surveyability, and a knowledge of when to make a *transition from one precision level to another*: in order to give a better overall picture or — conversely — to focus on details. This "*transition readiness*" often means quite simply this: that we know when to talk only vaguely about Smith, or when to speak about Smith in 1945 as compared with Smith in 1955, or when to speak about Smith in January 1955 as compared with Smith in February 1955. Furthermore, it is of the utmost importance, of course, that we explicitly state on what level of precision our discussion is held (cf. SCHULTZER 1938, p. 16 et seq.; GURMUND 1955, p. 92 et seq.).

To summarize, when we discuss in the following sections different scientific communication vehicles within preferential sociometry, we will try to evaluate them from the point of view of their relation to the analysis-synthesis criterion. They have to be sufficiently analytical (giving *differentiation*), but also be sufficiently synthetic (giving *generalization*) for the special purpose intended. Moreover, we will consider their freedom from irrelevant influences (*relevance*).

## II. VERBAL CONDENSATION (SOCIOPREFERENTIAL SEMANTICS)

One of the clearly underdeveloped fields within sociopreferential research has been the area of language. It is obvious that other kinds of secondary treatment of data — e. g., statistical analysis — are not very fruitful when the attributes of data, the relations between data, and the developments of data cannot be described efficiently due to inadequate terminology.

In a series of papers I have tried to demonstrate different approaches to a precise sociopreferential language (BJERSTEDT 1953, 1954 a, 1954 b). In this section I should like to summarize some of these points of view and to add new ones, thereby stressing the concepts and symbols that will be used in the present investigation.

### 1. Some Introductory Principles

#### A. *Different categories of terms*

The terms used in sociopreferential research are of different kinds. The following three categories are, however, of the greatest importance:

(a) everyday expressions which are taken for granted; (b) everyday expressions technically (operationally) defined; and (c) newly constructed technical terms.

*Everyday expressions which are taken for granted* are to be found repeatedly: there is frequent mention of "group", "leader", "group integration", etc., as though these terms possessed an exact, natural meaning, as though further definition were unnecessary. However, if no exact questions are asked in research work, no exact answers will be forthcoming. LUNDBERG gives one possible reason for the avoidance of any clear definition: "it would definitely circumscribe the meaning of words which are now used to express not relations, but feelings, usually vague in meaning but very strong in emotional significance" (1939, p. 58—59). It is obvious that this is true of several terms used in sociopreferential contexts: there is discussion of "isolation", "independence", "influence", "domination", "democratic atmosphere", etc., whereby the emotional accentuation sometimes seems to be more important than the exact delimitation of the conceptual content. It is obvious that this category of terms is to be avoided as much as possible. Even everyday terms less emotionally colored are often impractical for scientific use, since, as a rule, *everyday language does not distinguish between testproximal and testdistal levels of discourse*, i. e., between pure description and interpretation.

However, *everyday expressions* can be *technically* (*operationally*) *defined* and thus given a meaning, accurately determined by the method of investigation. Instead of trying to consider the question of what leadership "really" is — which in fact seems to imply a review of the meaning most people attach to the word (cf. the interesting "homopetal" approach in, e. g., NAESS 1952, 1953, GULLVÅG 1955) — there is the possibility of operationally defining the "leader" as a person who has received a specified number of choices (e. g., more than $M + 1\ S.D.$) in a sociometric choice situation (of a certain character); the example is chosen from JENNINGS (1950, p. 114). It is clear that this second category is to be preferred to the first; the possibility of exact research has been increased.

The third possibility is to use *newly constructed technical terms.* Instead of calling the most chosen individuals in a sociopreferential situation "leaders", we may call them "red stars" (MORENO 1934) or "socio-centers" (GIBB 1950, 1954). MORENO's gift for thinking up new terms has been fully employed in this field: terms such as "red triangles", "black squares", "chains", etc., refer directly to the method of investigation or the method of analysis and are thus defined.

The first terminological category being excluded for obvious reasons, the choice must be between the other two. Some of the pros and cons guiding our selection will be briefly discussed below with reference to the general principles outlined in the introductory section.

### B. *Terminological "sub-purity"*

#### a. *The confusion of testproximal and testdistal levels by the sender of the communication*

The scientist often has the ultimate aim of reaching testdistal generalizations. The risk is that his eagerness to attain this aim makes him not explicit enough with respect to the description of the immediate test-situation and of the assumed relationship between pure descriptional data and the interpretational hypotheses, thereby obscuring the conceptual interrelations even to himself.

It is certainly desirable gradually to create a common scientific terminology, into which all different testproximal descriptions may be "translated". Several attempts to establish more general systems of interpretative language in psychology and sociology have been made. However, we often hear reports of low correlations between different tests, which have been said to measure, e. g., the same psychological "trait" — "neuroticism", "introversion", "emotionality", "honesty", "social adjustment", "leadership", etc. Among other things, such facts show the danger of being too hasty when "translating" the test data into a more general language and thus speak in favor of at least retaining the testproximal description as a co-ordinated possibility. Often it seems wise to use an *explicit hypothetical interpretation*: such are the primary data, and such are the corresponding hypotheses. Although the interpretative hypothesis may appear to be an inferior one, nevertheless the *basis of the hypothesis*, i. e., the empirical facts upon which the hypothesis was founded, are left undisturbed. This, of course, ought to be self-evident.

Connected with the general principle of distinguishing as clearly as possible between testproximal and testdistal levels of discourse is the more special principle of using a *series of testproximal terms which are linguistically uncontaminated by the interpretative hypotheses.* In cases where the operative terms are "colored" by the interpretations, it is difficult both to *disconnect the proposed (conventional) interpretative hypothesis* and to *introduce new hypotheses.* While most Rorschach terms, for instance, stand up to the demands of testproximal freedom of hypotheses (detail responses, color responses, etc.), other test terminologies (e. g., part of the Szondi terms) are more "colored". This is also the case with many terms in sociopreferential research.

The obvious remedy for confusion between different levels of discourse is, then, to coin new terms; everyday language, as a rule, is not very helpful on this point. It is clear that neologisms are often rather unpractical: we easily split up our world into disconnected, "closed" operational systems with difficulties of inter-communication. Of course, our final aim has to be *linguistic unity combined with conceptual precision.* However, where it is impossible to arrive at both, it does not seem too rash to prefer heterogeneous exactness to inexact unity. What is the use of an artificial unity, created by using the same vague terms for disparate empirical operations? The usual result seems to be bewilderment and unnecessary discussion.

### b. *The confusion of operational definition and pre-operational usage by the receiver of the communication*

The use of the second category of terms outlined above (everyday expressions given a technical definition more or less deviating from conventional usage) may sometimes involve certain practical dangers for the receiver of the communication. Even though the concept is often useful, and the hypothetical possibility exists that everyday language will also take over the operationally defined meaning (cf., e. g., the word "horsepower"; LUNDBERG 1939, p. 61) — yet a certain confusion can easily arise due to *the conflict between operational definition and the pre-operational usage.* In a certain way every term is correct, as long as it is operationally defined and used consistently. On the other hand, nobody can escape the power of linguistic tradition; although operationally defined, terms taken from everyday language easily "absorb" part of their everyday meaning. The obvious remedy for the absorption of ideas which are connected with the traditional use of the term, but are irrelevant to the operational definition is to use the third category in the survey above, i. e., to create new terms.

Operational definition of terms borrowed from everyday language may often be described as a *conscious isolation* of certain parts of a complex and somewhat vaguely defined empirical content. From the *descriptive concept* $A = f(a, b, c, d \ldots)$, where the four written variables denote its main attributes, we obtain *constructed concepts* by a choice of variables which isolates some of these variables: $x = f(a)$; $y = f(b, d)$; etc. (cf. NYMAN 1951, p. 104). We may then speak of a "neglective fiction"

(VAIHINGER) or of a "*conceptual purification*" (HANS LARSSON; *ibid.*). The point stressed above could then be phrased thus: *the conceptual purification ought to be followed by a terminological purification* — in order not to be misleading for the receivers of the communication.[1]

### C. *Terminological "rigidity"*

Though a way of gaining conceptual precision by means of fictional isolation of certain parts of a complex empirical content may be useful and sometimes necessary, the danger is that, unskilfully applied, the purified concepts will be apprehended as, or confounded with, empirical facts. Elsewhere I have shown the risk of using conceptual purifications carelessly in socio-psychological work (BJERSTEDT 1952 a). The examples I selected were the following *bipolar* term couples: (a) JENNINGS (1947): the more personal evaluation in "psychegroups" ("psychetele"), *v.* the more objective evaluation in "sociogroups" ("sociotele"); (b) KOSKENNIEMI (1936): "Dimension der Nähe und Ferne", *v.* "Dimension der Distanz"; (c) several authors (cf. CUVILLIER 1950, p. 155, and the writings of BOGARDUS): "horizontal distance", denoting the degree of intimacy, *v.* "vertical distance", denoting hierarchical position. Although all these conceptual polarities may be good analytical instruments, it is necessary to make it clear that we deal with abstractions and fictional purifications. With reference to JENNINGS, MORENO has given warnings against too sharp a conceptual cleavage, showing that we have to talk about a "psycho-socio continuum", where the personal evaluation is more prominent in one situation and less prominent in another (MORENO 1947 a). Similar warnings may be given against using the other two conceptual couples carelessly. As I have shown earlier (BJERSTEDT 1952 a, p. 71; 1954 b), a picture of the conceptual interrelatedness in these cases may be given with the aid of one of ALF NYMAN's graphical models of problem-solving, viz., that illustrating LLOYD's "serial mediation" (LLOYD 1911), called by NYMAN the "method of *maxima* and *minima*" or the "redoubled method of zero" (1940, p. 28; cf. Figure 3.1). Here one limit ($I_{max}$—$S_o$)

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[1] What we are here warning against and trying to remedy by a terminological purification is what COOMBS (1953, p. 476) warns against under the name of "*operationism in reverse*": endowing the words with all the (conventional) meanings associated with a term. — The confusion between operational definition and pre-operational usage may be a danger even to the scientist himself. As STRODTBECK (1954, p. 655) says, "In the opening paragraphs of many articles the narrower interpretation of everyday concepts is clear, but in summary and synthetic statements the broader meaning is reintroduced with a resultant loss of precision in communication".

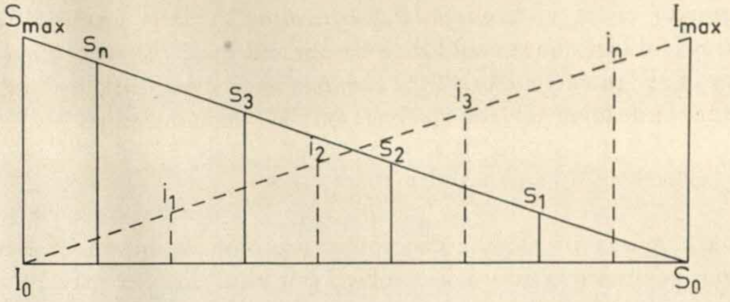

Fig. 3.1. The model of "serial mediation" ("redoubled method of zero") as applied to certain sociopreferential bipolarities.

may represent the fictional case when a group formation is directed only by objective — i.e., inter-subjective — or vertically differentiating factors ($I_{max}$ = maximum inter-subjective factors; $S_o$ = minimum or zero subjective factors). The other — similarly extrapolated — limit ($S_{max}$ — $I_o$) denotes the case when only personal-subjective or horizontally differentiating factors direct the process of group formation. The empirical cases are all mixed examples, where sometimes one factor-constellation preponderates and sometimes the other. It should be evident that the three term couples here mentioned are not identical as to meaning, but in the conceptual interrelations between their two antithetical extremes, they are similar. The thought model of the "serial mediation" is applicable to all of them as well as to a long series of other socio-psychological bipolarities (cf. our discussion of "personal", "semi-personal", and "formalized" preference aspects above, chap. 3).

## 2. A Testproximal Approach to a Precise Sociopreferential Language in Terms of Momentary Structure

One way of avoiding the ambiguous expressions of everyday language lies in the possibility of using a formal technical vocabulary.[2] — A

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[2] The resistance to formal technical vocabularies is fairly widespread. NEWCOMB speaks amusingly about the "temptation to anthropomorphize about humans" (1953, p. 4), showing itself, for instance, in our desire to use "human-sounding labels" (p. 5).

As part of the usual criticism against formal vocabularies, we may mention the following points: (a) They are difficult to learn. The same facts could be more easily identified by most readers when expressed in more conventional terms. (b) The formal vocabulary gives a false air of scientific approach, even when dealing with very simple linguistic description may be characterized — as is done, for instance, by Stenius (1954, p. 170) — as a schematic, *quasi-isomorphic picture* of the matter described. In the sentence "Bill is a friend of Paul", there is not a one-to-one correspondence between the words and the facts described. The six word structure is wholly arbitrary and determined by historical reasons. We could also write

"Bill *F* Paul",

where *F* symbolizes "is a friend of". Now the linguistic structure (two nomina propria and the relation between them) gives a clearer and more "isomorphic" picture of the "facts". We may evaluate different language systems by their capacity (a) to say all that is desired, (b) to say nothing that is not desired, and (c) to give a surveyable picture of difficult structures. The two first conditions are criteria of relevance, the last one corresponds to the analysis-synthesis criterion discussed above. In socio-preferential research we are concerned with judgments about individuals: Bill chooses Paul as a co-worker, Paul rejects Bill as a co-worker, etc. Certain structures of judgment (e. g., those which express choice, rejection, or indifference) are very common. It thus seems possible to set up a number of structure schemes, i. e., to formalize the judgments to *functions of judgments* or "propositional functions" (Whitehead & Russell 1925). These forms of proposition may then be used as exact and short technical terms.

In the following sections I want to demonstrate some ways in which the

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primary data. (c) A formal vocabulary may become a hindrance for further development, by prematurely forcing the phenomena into a rigid scheme.

This criticism may be just in many cases, and in each special case we have to compare the separate advantages and disadvantages. However, often the criticism is rather superficial. (a) The fact that single concepts may be identified more quickly by the average reader when expressed in conventional terms is of course not very important if, by a new denotation, any single concept is either more precisely delimited or better related to other similar concepts. (b) To a reader naively impressed by formulae the formal vocabulary may give the false impression that the simple data have been somehow "transformed" into scientific knowledge, but on the contrary, the scientist's intention when employing formal vocabularies is actually to keep the discussion on the primary facts. Briefly, the aim is not to give the impression of knowing a great deal, but repeatedly to remind us that we know very little. (c) The explicit formulation of what we do in a test-situation does not, as a rule, seem to be a hindrance to further interpretative development. On the contrary, without accuracy in description, no exact results can be attained. With a flexible system of symbols we may easily operate with data combinations for which everyday language lacks terms and which may therefore easily be simply overlooked.

sociometrist might use certain terms and symbols from the language of *relational logic* — a language which seems eminently well adapted to a science of "interpersonal relations" (cf. WIESE's "Beziehungslehre", 1933).[3]

## A. *Simple sociopreferential relations*

### a. *Direct dyadic relations*

In close connection with the conventional technical vocabulary of relational logic, I propose the following symbols as suited to sociopreferential data:

*The basic preference signs.* The relations between two individuals are symbolized by capital letters, let us say by $P$ for *positive choice*, $N$ for *negative choice* (rejection report), and $I$ for *"indifference"* (in the technical sense: neither positive, nor negative choice).[4]

*The choice directions.* If we want to express that $x$ has given $y$ a positive choice, we write $Pxy$ or $xPy$. The order, in which $x$, $y$, etc., are written, denotes in what "direction" the choice is expressed between them. The positive choice in the "opposite direction" (i. e., $y$ chooses $x$) is thus written $Pyx$ or $yPx$. In a similar way $Nxy$ or $xNy$ stands for "$x$ rejects $y$" and $Nyx$ or $yNx$ for "$y$ rejects $x$", while $Ixy$ or $xIy$ means "$x$ gives neither a positive nor a negative choice to $y$", and $Iyx$ or $yIx$ "$y$ gives neither a positive nor a negative choice to $x$".

*Some special qualifiers used to characterize the relationships further.* In order to be able to qualify further the relationships symbolized by

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[3] For the general principles of relational logic, we may refer to, e. g., SCHRÖDER 1895, §§ 1—3; WHITEHEAD & RUSSELL 1925, p. 200 et seq., 231 et seq., 418 et seq.; RUSSELL 1930, p. 42—62; STEBBING 1948, *pass.* — As an example of the utilization of symbolic logic for the purpose of creating a technical vocabulary, we may mention its application in the study of classificatory systems in zoology (GREGG 1954). — Among the formal vocabularies of various kinds which are already used in sociopreferential literature, we refer to those discussed by DODD, LUCE, and PERRY (DODD 1943, 1951; LUCE & PERRY 1949, LUCE 1950).

[4] The capital letters are thus used here not as variables but as interpreted constants. While, e. g., $Rxy$ — any relation between any two terms — seems too wide and abstract for our purpose, a relation $Pxy$, where $P$ is defined as a positive choice, is of practical use to us. — The exact testproximal meaning is thus: $P =$ "gives a positive choice to", $N =$ "gives a negative choice to", and $I =$ "gives neither a positive nor a negative choice to". In order that our explanations of different symbolic combinations shall not be too unwieldy, we will sometimes use the less exact translations $P =$ "chooses", $N =$ "rejects", $I =$ "is indifferent towards". We stress, however, from the beginning that the meaning of our symbols is restricted to correspond to the exact translations given above.

$P$, $N$ and $I$, we may add post-subscripts of different kinds. Three types will be mentioned:

(a) *Temporal qualifiers*, symbolizing the number of the test-situation in a series of retests;

(b) *Preference level qualifiers*, symbolizing the intensity of the choices;

(c) *Choice aspect qualifiers*, symbolizing the preference aspect used.

The number of the test-situation may be given by Roman numerals: $P_{I}$ (positive attitude at the first test-situation), $N_{II}$ (negative attitude at the second test-situation), etc. The preference level may be symbolized by Arabic numerals: $P_1$ (a first choice), $P_2$ (a second choice), etc. The special choice aspect, finally, may be communicated by small letters, e. g., $P_w$ (positive choice as *w*orkmate). — When several subscripts are given to the same relational symbol it may be of some value for the sake of clarity, always to place them in a standard order, e. g., in the order given above, and moreover to use brackets in the following way: $x(P_{I2w})y$, which is to be read: "at the first test-situation $x$ gives $y$ his second positive choice as a workmate".

*Mutual two-way relations.* Mutual two-way relations may be symbolized by conjunctions:

$xPy$ & $yPx$ (= "$x$ chooses $y$, and $y$ chooses $x$");
$xNy$ & $yNx$ (= "$x$ rejects $y$, and $y$ rejects $x$");
$xIy$ & $yIx$ (= "$x$ is indifferent towards $y$, and $y$ is indifferent towards $x$").

If we want to compress such a conjunction into one expression and thus give a relation in two directions, we may, for example, use two capital letters ($xPPy = xPy$ & $yPx$; $xNNy = xNy$ & $yNx$; $xIIy = xIy$ & $yIx$) or a sign of equality above the letter symbolizing the relationship ($x\overset{=}{P}y = xPPy$; $x\overset{=}{N}y = xNNy$; $x\overset{=}{I}y = xIIy$). Using the preference level qualifiers as discussed above we may distinguish between what we could call "*level-identical reciprocations*", such as $xP_1P_1y$, $xP_2P_2y$, $xP_3P_3y$ (which also may be symbolized $x\overset{=}{P}_1y$, $x\overset{=}{P}_2y$, $x\overset{=}{P}_3y$,) on the one hand and "level-different reciprocations" (e. g., $xP_5P_1y$) on the other.

*Non-mutual two-way relations.* Non-mutual two-way relations may be correspondingly symbolized:

$xPNy = xPy$ & $yNx$ (= "$x$ chooses $y$, but $y$ rejects $x$");
$xNPy = xNy$ & $yPx$ (= "$x$ rejects $y$, but $y$ chooses $x$");
$xPIy = xPy$ & $yIx$ (= "$x$ chooses $y$, but $y$ is indifferent towards $x$").

*The converse.* In the relation $xPy$ we see both the class of individuals who make up the *referent* $x$ (Antezedent, Vorderglied; the domain of $P$, or simply first constituent), and the class of individuals who make up the *relatum* $y$ (Konsequent, Hinterglied; the converse domain of $P$, or simply second constituent). Both classes are of interest in sociopreferential research. Sometimes our interest may focus on the referent (in this case: the choice-senders), sometimes on the relatum (in this case: the choice-receivers). In the latter case, it may sometimes be of use to have a special symbolization for the converse of a relation. The converse of the positive relation (which we might symbolize with $\breve{P}$) exists between two individuals $y$ and $x$ ($\breve{P}yx$), if and only if $P$ exists between $x$ and $y$. We may speak of the *P-converse* as well as the *N-converse* and the *I-converse* (cf. also section *D* below on "relational summaries").

b. *Direct polyadic relations*

So far we have only discussed relations between two individuals (dyadic relations). Relations between three persons may be symbolized in the following ways (*triadic relations*):

$Pxyz = xPy \;\&\; yPz$ (3-person $P$-string; one-way open $P$-triad);
$Nxyz = xNy \;\&\; yNz$ (3-person $N$-string; one-way open $N$-triad);
$\bar{P}xyz = xPy \;\&\; yPz \;\&\; zPy \;\&\; yPx$ (3-person $P$-chain; two-way open $P$-triad);
$\bar{N}xyz = xNy \;\&\; yNz \;\&\; zNy \;\&\; yNx$ (3-person $N$-chain; two-way open $N$-triad);
$Pxyzx = xPy \;\&\; yPz \;\&\; zPx$ (triangle of one-way positive choices; one-way red triangle; one-way closed $P$-triad);
$Nxyzx = xNy \;\&\; yNz \;\&\; zNx$ (triangle of one-way negative choices; one-way black triangle; one-way closed $N$-triad);
$\bar{P}xyzx = xPy \;\&\; yPz \;\&\; zPx \;\&\; xPz \;\&\; zPy \;\&\; yPx$ (or defined more briefly: $x\bar{P}y \;\&\; y\bar{P}z \;\&\; z\bar{P}x$; triangle of mutual positive choices; two-way red triangle; "genuine" red triangle; two-way closed $P$-triad).

In the same way we obtain
$\bar{N}xyzx$ = triangle of mutual negative choices; two-way black triangle; "genuine" black triangle; two-way closed $N$-triad.

Similarly, we may symbolize relations between four, five or more persons (*tetradic*, *pentadic*, and other *polyadic relations*); — e. g., with $Pxyzu$ a 4-person $P$-string (a one-way open $P$-tetrad), with $\bar{P}xyzux$ a square of mutual positive choices (a two-way red square; a two-way closed $P$-tetrad).

### c. *Indirect relations*

*Ambivalent relative-product-relations (ARP-relations).* Two relations ($P$ and $N$) may be combined to make the *relative product* $P/N$. This relation $P/N$ (where $P$ is the "first relative factor", "relativer Vorfaktor", or "Multiplikand" and $N$ the "second relative factor", "relativer Nachfaktor", or "Multiplikator") exists between two individuals, $x$ and $y$ ($xP/Ny$), if and only if there is a third individual $z$, whose relations to $x$ and $y$ are $xPz$ and $zNy$. So far as I know, no term has been coined for such a relationship in preferential sociometry, and perhaps it is not of the same immediate interest as the relations previously mentioned, but one of the advantages produced by a symbolic system of the sort here outlined is the possibility of being able to express briefly and precisely relations for which everyday language lacks terms. Leaving the restricted testproximal terminology for a moment, we may describe the situation in the following way: In $xP/Ny$, $x$ has not expressed any opinion about $y$ in the test, but gives a choice to a certain person $z$, who has a negative attitude towards $y$. This connection may of course be of interest: $x$'s attitude towards $y$ may easily be influenced by $z$'s attitude towards $y$. This is, it may be supposed, still more likely in the relation $x\bar{P}/Ny$, which is equivalent to the expression $x\bar{P}z$ & $zNy$ (i. e., mutual positive choice between $x$ and $z$, while $z$ rejects $y$) and in the relation $x\bar{P}/\bar{N}y$, which is equivalent to $x\bar{P}z$ & $z\bar{N}y$. (A more detailed discussion of this type of relation is given in BJERSTEDT 1954 a.)

*Univalent relative-product-relations (URP-relations).* Not only have we *ambivalent* relative-product-relations, (i. e. relative products, in which the first and second factors are different); but we also have *univalent* ones. The relative product of two relations of the same kind ($P/P$ or $N/N$) may be considered as the *second power of the relation* ($P^2$ or $N^2$). $xP^2y$ ($= xPz$ & $zPy$) thus symbolizes the same structure as $Pxzy$, but instead of defining it as a $P$-string between three individuals, $xP^2y$ expresses it primarily as a relation between the two — not otherwise related — individuals, $x$ and $y$. Through this we get a one-way, positive two-step relation, a concept of interest especially in matrix multiplication (cf. below, the section dealing with sociomatrices). The third power of $P$ ($P^3$) is defined as $(P/P)/P$. The relation $P^3$ exists between two individuals $x$ and $y$ ($xP^3y$), if and only if there are two individuals $z$ and $u$, whose relationships are $xPz$ & $zPu$ & $uPy$ (a one-way positive three-step relation between $x$ and $y$). $P_{po}$ is the expression for a one-way positive several-step relation between two individuals, the length of which is undetermined. In a similar way we may symbolize one-way negative two-step relations, three-step relations, and several-step relations with $N^2$, $N^3$, and $N_{po}$. — Furthermore, it seems convenient to condense a two-way positive two-step relation with $\bar{\bar{P}}^2$, a two-way positive three-step relation with $\bar{\bar{P}}^3$, and a two-way positive several-step relation with $\bar{\bar{P}}_{po}$. Similarly, of course, we use the corresponding negative expressions: $\bar{\bar{N}}^2$, $\bar{\bar{N}}^3$, and $\bar{\bar{N}}_{po}$. (For further details, cf. BJERSTEDT 1954 a).

### B. *Corresponding "socioperceptual" relations*

The "socioperceptual" data (Bill "perceives" Paul as choosing him, but Robert as rejecting him, etc.) have a clear relational character and may be symbolized according to the general principles followed above with respect to the simple sociopreferential relations. In order to stress that we here deal testproximally with *"perception"-reports* (in "guessing" questionnaires of the type exemplified in chap. 4), we will, as a rule, use the word *"guess"* instead of "perception".

#### a. *The primary "socioperceptual" symbolization*

In order to symbolize "socioperceptual" relations, we use the acute accent (´) for outgoing ("given") guess, the grave accent (`) for incoming ("received") guess (the "socioperceptual converse"), and a combination of both (ˇ) for symmetrical two-way guesses. Some examples will be given:

$x\acute{P}y$ = $x$ guesses ("perceives") that $y$ gives him a positive choice
("$x$ feels chosen by $y$");
$x\acute{N}y$ = $x$ guesses ("perceives") that $y$ gives him a negative choice
("$x$ feels rejected by $y$");
$x\acute{I}y$ = $x$ neither guesses ("perceives") that $y$ gives him a positive choice
nor that $y$ gives him a negative choice;
$x\grave{P}y = y\acute{P}x$; $x\grave{N}y = y\acute{N}x$; $x\grave{I}y = y\acute{I}x$;[5]
$x\check{P}y = x\acute{P}y$ & $y\acute{P}x$; $x\check{N}y = x\acute{N}y$ & $y\acute{N}x$; $x\check{I}y = x\acute{I}y$ & $y\acute{I}x$;
$\acute{P}xyzx$ = triangle of one-way positive guesses;
$\check{P}xyzx$ = triangle of two-way positive guesses;
$x\check{P}/\check{N}y = x\check{P}z$ & $z\check{N}y$.

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[5] The symbol for the "socioperceptual converse" (like the corresponding sociopreferential symbol) is usually unnecessary when describing relational structures, but will be of importance when dealing with "relational summaries" for single individuals (cf. section *D* below).

### b. *Sociopreference-"socioperception" correspondence*

By placing the simple sociopreferential symbolizations beside the corresponding "socioperceptual" symbolizations in the empirical case, we shall have an immediately surveyable picture of the degree of concordance between the "perceptual" and preferential processes. If we wish to do so, we may combine the two types of symbols in a single relational expression. In these cases we should often use brackets for one-way relations and asymmetrical two-way relations in order not to cause confusion. Some examples will illustrate the general procedure:

$x(P\acute{P})y$ $= xPy$ & $x\acute{P}y$ (i. e., "$x$ chooses $y$ and feels chosen by $y$"; one-way positive "perception-performance" correspondence);

$x(N\acute{N})y$ $= xNy$ & $x\acute{N}y$ (i. e., "$x$ rejects $y$ and feels rejected by $y$"; one-way negative "perception-performance" correspondence);

$x(P\grave{P})y$ $= xPy$ & $x\grave{P}y$ (i. e., "$x$ chooses $y$, who feels, quite rightly, chosen by $x$"; one-way positive "perception-reception" correspondence);

$x(N\grave{N})y$ $= xNy$ & $x\grave{N}y$ (i. e., "$x$ rejects $y$, who feels, quite rightly, rejected by $x$"; one-way negative "perception-reception" correspondence);

$x\bar{\bar{P}}\check{P}y$ $= xPy$ & $yPx$ & $x\acute{P}y$ & $y\acute{P}x$ (i. e., "$x$ chooses $y$, who feels, quite rightly, chosen by $x$, and $y$ chooses $x$, who, also rightly, feels chosen by $y$"; two-way "perception-performance" *and* "perception-reception" correspondence; dyad with "complete" positive symmetry);

$x\bar{\bar{N}}\check{N}y$ $= xNy$ & $yNx$ & $x\acute{N}y$ & $y\acute{N}x$ (i. e., dyad with "complete" negative symmetry);

$\bar{\bar{P}}\check{P}xyz$ $= x\bar{\bar{P}}y$ & $y\bar{\bar{P}}z$ & $x\check{P}y$ & $y\check{P}z$ (i. e., a 3-person chain [two-way open triad] of symmetrical positive preferences *and* symmetrical positive guesses);

$\bar{\bar{P}}\check{P}xyzx$ $= x\bar{\bar{P}}y$ & $y\bar{\bar{P}}z$ & $z\bar{\bar{P}}x$ & $x\check{P}y$ & $y\check{P}z$ & $z\check{P}x$ (i. e., a triangle [closed triad] of symmetrical positive preferences *and* symmetrical positive guesses);

$x\bar{\bar{P}}\check{P}/\bar{\bar{N}}\check{N}y$ $= x\bar{\bar{P}}\check{P}z$ & $z\bar{\bar{N}}\check{N}y$ (i. e., this relation holds between $x$ and $y$, if and only if there is one individual $z$, who has a complete symmetrical positive relation, both "preferential" and "perceptual", with $x$, and a complete symmetrical negative relation, both "preferential" and "perceptual", with $y$).

The examples could be continued at length: the possible combinations are numerous. I hope that the examples given have demonstrated some of the general principles and the advantages of this relational symbolization in gaining compression and flexibility. (A comparison between the empirical frequency of different relationships and chance expectancies may often be of interest; cf., for the dyadic relations, a recent paper by TAGIURI, BRUNER, & KOGAN 1955.) Sometimes we may wish to symbolize that $x$ perceives $y$ as giving $z$ a choice, etc. In such cases we may use the acute accent as a general symbol of "guessing" and give the guessed relation within brackets. A few examples will be given:

$x'(yPz) = x$ guesses that $y$ gives a positive choice to $z$;

$y'(z\bar{\bar{N}}u) = y$ guesses that $z$ and $u$ form a negative symmetrical dyad.

## C. *Relational plurels*

In the sections above we discussed dyads, triads, tetrads, pentads, etc., by which we referred to persons, directly or indirectly *related to each other*. It may be of some use also to be able to speak of "*relational plurels*", i. e., categories of individuals who have one or more relational characteristics in common, but who are *not necessarily related to each other*, (for the general concept of "plurel", cf. DODD 1942). Two classes of such relational plurels will be distinguished here:

(a) those in which the common characteristic is the *kind* of relation only (*kind-identical*); and

(b) those in which both the kind and the direction of relation are common characteristics (*kind-direction-identical*).

### a. *Kind-identical relational plurels*

The following symbolizations are proposed:[6]

$P$ *plurel* = those who send (one or several) positive choices;

$\bar{P}$ *plurel* = those who receive (one or several) positive choices;

$\bar{\bar{P}}$ *plurel* = those who have (one or several) positive choices reciprocated;

$-P$ *plurel* = those who do not send positive choices;

$-\bar{P}$ *plurel* = those who do not receive positive choices;

$-\bar{\bar{P}}$ *plurel* = those who do not have any positive choice reciprocated;

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[6] The symbolization in BJERSTEDT 1954 a has been somewhat changed in the case of relational plurels in order to be more inclusive.

$P + N$ *plurel* = those who send either positive or negative choices;
$P \cdot N$ *plurel* = those who send both positive and negative choices;
$P$ *pair-plurel* = all those pairs of $x$ and $y$, between which the relation $P$ exists;
$-P$ *pair-plurel* = all those pairs of $x$ and $y$, between which the relation $P$ does not exist;
$P + N$ *pair-plurel* = all those pairs of $x$ and $y$, between which either the relation $P$ or the relation $N$ exists;
$P \cdot N$ *pair-plurel* = all those pairs of $x$ and $y$, between which both the relation $P$ and the relation $N$ exist.

In so far as we are concerned with only one choice aspect, the latest category is empty. But if we use two choice aspects, for example, one semi-personal aspect symbolized by $s$ (e. g., choice of "leisure-time pals") and one which is more formalized, symbolized by $f$ (e. g., choice of workmate) we may talk about two product-classes: the pair-plurel $P_s \cdot N_f$ (those pairs of $x$ and $y$, where $x$ chooses $y$ in the semi-personal situation but rejects him in the more formalized situation), and $P_f \cdot N_s$ (those pairs of $x$ and $y$, where $x$ chooses $y$ in the more formalized situation, but rejects him in the semi-personal situation).

From this general demonstration, the meaning of other sociopreferential symbols such as $N$ *plurel*, $-N$ *plurel*, $\bar{\bar{P}}$ *pair-plurel*, $\bar{\bar{P}} + \bar{\bar{N}}$ *pair-plurel*, etc., should be understandable without further explanation. This should be the case also with corresponding socioperceptual symbols (e. g., $\acute{P}$ *plurel*, $\acute{N}$ *plurel*) and combinations (e. g., $\bar{\bar{P}} \cdot \acute{\bar{P}}$ *pair-plurel*).

b. *Kind-direction-identical relational plurels*

We may occasionally be interested in speaking of a category of people who are receiving choices from a special individual $x_1$ or giving choices to a special individual $y_1$. A similar categorization may be desirable in received and given "socioperceptions". For these cases we propose the following symbolization:

$(x)(xPy_1)$ = the plurel of $x$ about which the proposition $xPy_1$ is true, i. e., those people who give a positive choice to $y_1$: "$y_1$-choosing plurel";
$(x)(x\bar{P}y_1)$ = the plurel of $x$ about which the proposition $x\bar{P}y_1$ is true, i. e., those people to whom $y_1$ gives a positive choice: "$y_1$-chosen plurel"; may also be symbolized thus $(x)(y_1Px)$;

$(x)(x\bar{\bar{P}}y_1) =$ the plurel of $x$ about which the proposition $x\bar{\bar{P}}y_1$ is true, i. e., those persons whose positive choices are reciprocated by $y_1$.

Similarly, we use expressions, such as: $(x)(xNy_1)$, $(x)(x\bar{N}y_1)$, $(x)(x\bar{\bar{N}}y_1)$, $(x)(xIy_1)$, $(x)(x\bar{I}y_1)$, $(x)(x\bar{\bar{I}}y_1)$, $(x)(x\acute{P}y_1)$, $(x)(x\grave{P}y_1)$, $(x)(x\check{P}y_1)$, $(x)(x\acute{N}y_1)$, $(x)(x\grave{N}y_1)$, $(x)(x\check{N}y_1)$, $(x)(x\acute{I}y_1)$, $(x)(x\grave{I}y_1)$, $(x)(x\check{I}y_1)$.

In these expressions we may replace the single person $y_1$ with two or several persons. If we wish to show that the relation exists with all of these people, we write down their symbols side by side; if we wish to show that the relation exists with one of them, we separate their symbols with the addition sign (+). The plurel $(x)(xPy_1y_2)$ thus denotes "those individuals who give positive choices to both $y_1$ and $y_2$", whilst the plurel $(x)(xPy_1 + y_2)$ denotes "those individuals who give positive choices to either $y_1$ or $y_2$".

A plurel of persons may not only behave as a relational plurel, but also be conscious of this fact. In such cases we may speak of "*conscious plurels*" or "*we-plurels*", and if we want to symbolize this, we may use the general "perceptual" symbol (′) above the category symbol in the following way:

$(\acute{x})(xPy_1)$ those $x$ who not only give $y_1$ positive choices, but are also conscious of the fact that they behave as a relational plurel in this respect; "$y_1$-choosing we-plurel";

$(\acute{x})(x\bar{P}y_1)$ those $x$ who not only receive positive choices from $y_1$, but are also conscious of the fact of being a relational plurel in this respect; "$y_1$-chosen we-plurel";

$(\acute{x})(x\bar{\bar{P}}y_1)$ those $x$ who not only have a positive mutual relation with $y_1$, but are also conscious of the fact of being a relational plurel in this respect.

Sometimes we may be interested in speaking of a category of people who direct their choices similarly without specifying single choice-receivers ($y_1$, $y_2$, etc.). Then we may use the *image* concept. *The P-image of S* ($P''S$) may be defined as the set in which any $x$ is a member, if and only if there is a $y$ such that $xPy$ & $y \varepsilon S$ (the epsilon is used in the conventional meaning "is a member of", and $S$ is used for some kind of set). Using $HSM$ to denote the category of pupils having *h*igh *s*chool *m*arks, then the $P$-image of $HSM$ ($P''HSM$) is the plurel of pupils giving positive choices to individuals with high school marks.

## D. *Relational summaries: Basic sociopreferential variables and the concept of multi-variable macro-differentiation*

### a. *Introductory note on the "typological" approach*

The word "type" is often used in the same sense as "category" or "logical class", i. e., as a collective noun for a number of individuals, who are alike (or relatively alike) in a certain respect at a certain time. "The procedure of typing is no more and no less than a procedure of classification" (CHEIN 1943, p. 97). Defined in that way, the type concept cannot evoke much controversy. But often one or several other conditions are explicitly or implicitly associated with this concept, sometimes without a clear understanding of whether the association is meant to be necessary (*ex definitione*) or additional. Two such frequent conditions may be mentioned: (a) In the "typological" approach, extreme values are said to be regarded as more usual than middle values, which seems to be incompatible with most experience in differential psychology. (b) In the "typological" approach not only *inter*individual, but also *intra*individual comparisons are said to be employed, i. e., a *multi*-variable reference system is used.

The first of these two conditions is conventionally criticized as a "wrong" presupposition connected with the "subjective-global" assessment of individuals (the case of "*non-exact synthesis*"). The second condition, on the other hand, is sometimes emphasized by the defenders of the "typological" approach as representing a broader and more integrative conception of personality than the segmental analysis of many "psychometrists" (the case of "*non-synthetic exactness*").

The criticism of the first condition often seems to be made quite automatically without much exact analysis. The slogan of the opposition, "the type is atypical" (disregarding the equivocal use of terms) only means, in fact, that individuals belonging to certain types do not belong to the most common type (CHEIN 1943, p. 96). None of the best known "typologists" (JUNG, KRETSCHMER, PFAHLER, JAENSCH) believe the empirical distributions to be discontinuous; instead, the "pure type" is emphatically discussed as an "*Annäherungsbegriff*" (WELLEK 1950, p. 25; cf. also the discussion by EYSENCK 1953, p. 9 et seq.). Furthermore, bimodality may sometimes depend on the procedure of data analysis (dichotomization in the case of high intercorrelation between different components) and may therefore be obtained even in objective assessment of such a kind (EKMAN 1952, p. 142—145).

Similarly, the advantage of the multi-dimensionality is sometimes automatically mentioned without its being observed that this advantage is often obscured by a one-sided interdimensional approach. Thus, not infrequently only certain kinds of variation are considered (viz., those from the highest score for one dimension combined with a low score for the other dimension, pure *A*-types, to the extreme opposite combination, pure *B*-types), whilst no place is given to cases with low or high values in both dimensions simultaneously ("atypical cases"; EKMAN 1951 b).

Briefly then, the "typological" approach has often been misrepresented both by its defenders and critics. In order not to burden an already ambiguous term with more definitions, we will not use it in our classification below, but will try to keep in mind the typologist's aim of multi-variable synthesis and show certain ways in which this aim may be approached.

### b. *The concept of multi-variable macro-differentiation*

By a simple cross-classification we arrive at the four-field table given in Table 3.1.

It is important to observe that there is only a relative difference between macro- and micro-differentiation: the latter uses the smallest possible scalable units, whilst the former either cannot use such a fine gradation or for one reason or other remains satisfied with a more crude division of the variation.

Some examples from the field of preferential sociometry may illustrate the four kinds of differentiation:

(1) *One-variable micro-differentiation* means a finer differentiation with respect to one variable. It is obvious that the sociopreferential variables — those points of view from which the individuals vary in a sociometric choice situation — are theoretically infinitely numerous, should we take into consideration all possible preference aspects. In order to limit the number of variables to a practical minority and at the same time to avoid non-essentia in classification, we consider first and foremost only those viewpoints common to all preference aspects ("interaspectual" variables). The number of received positive choices — the degree of "acceptance" or "desirance" in more test-distal terms — is the variable which has most frequently been used in sociopreferential classification. An example of a one-variable micro-differentiation would be the direct use of the number of positive choices received (or corresponding standard scores, for example) for the classification of individuals. This is one of the most common approaches in preferential sociometry.

Table 3.1. A Rough Classification of Various Kinds of Differentiation

| | micro-differentiation | macro-differentiation |
|---|---|---|
| one-variable differentiation | (1)<br>one-variable micro-differentiation | (2)<br>one-variable macro-differentiation |
| multi-variable differentiation | (3)<br>multi-variable micro-differentiation | (4)<br>multi-variable macro-differentiation |

(2) *One-variable macro-differentiation* means a relatively crude classification with respect to only one variable. An example is the common differentiation between the sociometrically overchosen, middle-chosen, and underchosen, in which the manner of establishing the limits has been different: one may, like BRONFENBRENNER, try to determine the statistically significant deviations and place the deviant cases in the external categories (1944 a); one may fix the limit between the middle class and extreme classes at $M \pm 1\ S.D.$ like JENNINGS (1950, p. 67, 114); or one may simply allot a certain percentage to the different categories like NORTHWAY (1940).

Of course, the limits used in macro-differentiation are always relatively arbitrary, and the question may arise as to why we should bother to attempt a crude classification, when a more differentiated scale is available. The answer is that a scale can be *too* differentiated to be completely psychologically significant. An individual who receives eight choices is insufficiently distinguished, we may feel, from a person who receives seven or nine (in the same way as, e. g., the difference between an *IQ* of 114 and an *IQ* of 112 or 116 is felt to be negligible).

(3) *Multi-variable micro-differentiation* means a finer classification with respect to more than one variable. A diagram may be made by listing positive choices received along the $X$-axis and positive choices given along the $Y$-axis; each individual may then be represented by a point on the $XY$-plane, determined by his position with respect to both variables. Three variables may be used by introducing the number of positive choices reciprocated along the $Z$-axis; each individual is then represented by a point in the $XYZ$-space (cf. the concept of "Merkmalraum", HEMPEL & OPPENHEIM 1936, or "attribute space", LAZARSFELD 1937, LAZARSFELD & ROSENBERG 1955).

Table 3.2. Multi-Variable Macro-Differentiation: A Simple Example

| | | | |
|---|---|---|---|
| high $Y$ | **pure $Y$** | high $Y$ mixed | double high |
| middle $Y$ | low $X$ mixed | **central mixed** | high $X$ mixed |
| low $Y$ | double low | low $Y$ mixed | **pure $X$** |
| | low $X$ | middle $X$ | high $X$ |

(4) *Multi-variable macro-differentiation* means a relatively crude classification with respect to more than one variable. By using a three-part division of both variable $X$ and variable $Y$, the $XY$-plane may be simplified into a dedifferentiated nine-field table of the general type shown in Table 3.2.

Similarly the exact $XYZ$-space might be dedifferentiated into a 27-cube aggregate. Sometimes we have to choose between very reliable and exact single-score data and less exact multi-score data. In the first case we have the exact position on one variable (one-variable micro-differentiation), in the other the approximate position on several variables (multi-variable macro-differentiation). As Cronbach (1950) has pointed out, the exact method is then not necessarily superior to the less exact: it is not certain that we can find a man more easily by knowing that his house is on the parallel 38° 40′ than by knowing that he lives somewhere in Kansas. The simplest statistical approach to handling test data is to treat one score at a time, as in the $t$-test, for example. However, many examples can be given to show the importance of considering interrelations of scores. Cronbach gives an illustration from the Wechsler-Bellevue test: Perhaps low Comprehension is indicative of schizophrenia when accompanied by high Block Design, but not when the subject's Block Design score is normal or low. — This argument has been applied to the case when we had to choose between exact single-scores and less exact multi-scores. But even in the case where exact multi-scores are available, we may prefer an analysis based on dedifferentiated macro-data, since the *sub-compression* of the multi-dimensional *micro*-differentiation often makes the total situation *less surveyable.* Not infrequently, then, the multi-variable *macro*-differentiation seems best fitted to satisfy the demands of the *analysis-synthesis criterion* discussed above. If the investigator uses this approach to classification and combines it with a certain "*transition readiness*" and a knowledge of the other kinds of differentiation available, he seems to be able to make the best possible use of his sociopreferential data.

### c. *Basic sociopreferential and "socioperceptual" variables*

We mentioned above that in order to limit the number of sociopreferential variables to a practical minority, it might be of advantage to consider only the variables common to all preference aspects. The consideration of preference signs seems applicable in every case; the sub-division into "positive", "negative", and "indifferent" relations has been a basic assumption throughout our discussion. The consideration of choice direction is of primary importance; the sub-division into "outgoing", "incoming", and "mutual" choices has also been continually taken into account. Using a cross-classification of these two sub-divisions we arrive at nine kinds of variables which it is possible to designate as basic: positive choices made, positive choices received, positive choices reciprocated; negative choices made, negative choices received, negative choices reciprocated; "indifferences" made, "indifferences" received, "indifferences" reciprocated. A similar classification may be made with respect to the corresponding "perceptual" data. The resulting eighteen variables are set out in Table 3.3 and Table 3.4, where, in addition, a series of symbols are proposed for short-hand use. These symbols are directly modelled on the relational ones above: capital letters have been used as symbols for relations, whilst the corresponding small letters are now used for variables in the present sense. An example: If $x$ gives $y$ a positive choice, we may symbolize this fact $xPy$. If $x$ gives many, but $y$ few positive choices, we may say that $x$ has a high $p$-score and $y$ a low $p$-score.

### d. *Describing the individual by placing him in the basic attribute space*

A good description of an individual is obtained by stating his position in relation to all the basic sociopreferential and "socioperceptual" variables. This statement may be of a micro-character (raw scores: number of choices, or standard scores) or of a macro-character (dividing each variable into two, three, or four parts). JENNINGS (1950) used a macro-differentiation in two parts for the first six of our basic variables. (These are of course most important, since "indifferences" — "abstentions" — have a more indirect

Table 3.3. *Nine Basic Sociopreferential Variables*
(Relational Summaries)

| Symbol | Verbal description | Short oral form |
|---|---|---|
| $p$ | positive choices made | *p* out |
| $\bar{p}$ | positive choices received | *p* in |
| $\bar{\bar{p}}$ | positive choices reciprocated | *p* double |
| $n$ | negative choices made | *n* out |
| $\bar{n}$ | negative choices received | *n* in |
| $\bar{\bar{n}}$ | negative choices reciprocated | *n* double |
| $i$ | non-choices made | *i* out |
| $\bar{\imath}$ | non-choices received | *i* in |
| $\bar{\bar{\imath}}$ | non-choices reciprocated | *i* double |

Table 3.4. *Nine Basic "Socioperceptual" Variables*
(Relational Summaries)

| Symbol | Verbal description | Short oral form |
|---|---|---|
| $\acute{p}$ | positive guesses made | *p*-guess out |
| $\grave{p}$ | positive guesses received | *p*-guess in |
| $\check{p}$ | positive guesses reciprocated | *p*-guess double |
| $\acute{n}$ | negative guesses made | *n*-guess out |
| $\grave{n}$ | negative guesses received | *n*-guess in |
| $\check{n}$ | negative guesses reciprocated | *n*-guess double |
| $\acute{\imath}$ | non-guesses made | *i*-guess out |
| $\grave{\imath}$ | non-guesses received | *i*-guess in |
| $\check{\imath}$ | non-guesses reciprocated | *i*-guess double |

character than the positive and negative choices, and the "socioperceptual" variables are often excluded from sociometric investigation.) The position of the individual in the single variable is denoted by JENNINGS with + and — for values above and below the mean of the group. She thus obtains a relatively surveyable description of the individual in terms of his choice-and-rejection pattern, through placing the plus and minus signs for the six variables in a certain order (corresponding to the order in Table 3.3). The choice-and-rejection pattern +—— ——— thus means that a certain individual has a value above the mean as to the number of positive choices made, but that he has values below the mean as to the other five variables.

JENNINGS' symbolization may be extended in different ways: (a) by using plus and minus signs also for the other basic variables discussed above, or (b) by also employing, besides the two-part division, other types of divisions (a three-part division, for example, is sometimes more useful in the case of normal or near-normal distributions). — If we used all the eighteen variables, we should obtain rather unwieldy formulae. Excluding variables dealing with "indifferences", the result is a twelve-value pattern which might be of some use. The *"preference-and-perception" pattern* $+++\;---/+++\;---$ for a specific individual thus means, that all his values for positive variables (both preferential and "perceptual") are above the mean, whereas all his values for negative variables are below the mean. — If a three-part division is used instead of the two-part division, we might employ $+$ for values above $M + 1\ S.D.$, $-$ for values below $M - 1\ S.D.$, and 0 for the values around $M$. The "preference-and-perception" pattern of the same individual might then perhaps change to $0{+}0\;000/0{+}0\;000$, which means that only his values as regards positive choices received and positive guesses received deviate at all noticeably from the mean. When using a two-part and a three-part division as alternative possibilities, it will of course be of importance to indicate in each specific case which kind of division is utilized.

Some special qualifiers were used above, in order to characterize the *relationship* further. It may be desirable in some cases to use similar devices in order to characterize the *individuals* further. JENNINGS' own choice-and-rejection pattern, or some of the extensions proposed here, may then be placed as scripts in the formula. In order that the expressions should not take up too much space, a simple post-subscript is better avoided and replaced by, for example, the following arrangement: the first three variables (positive choices) are placed as pre-superscript, the next three (negative choices) as pre-subscript, the following three (positive guesses) as post-superscript, and the final three (negative guesses) as post-subscript. The individual discussed above, whom we will call $x$, might then be designated as follows (using the two-part division):

$${}^{+++}_{---}x^{+++}_{---}$$

The following formula may at the first glance look rather complicated:

$${}^{+00}_{000}x^{000}_{+00}\quad(P\acute{N})(N\acute{P})\quad{}^{0++}_{+00}y^{+00}_{000}$$

In fact, however, when we consider how much information it compresses, we have to concede that it is fairly simple. We are not only informed that $x$ gives $y$ a positive choice, whereas $y$ gives $x$ a negative choice, and that both "perceive" the other individual's attitude correctly: we can also see the general position of the two individuals with respect to no less than twelve different variables. We notice that $x$ is high on outgoing positive choices and on outgoing negative guesses, whilst $y$ is high on incoming and reciprocated positive choices, outgoing negative choices, and outgoing positive guesses. In other words, $x$ may be assumed to be searching fairly eagerly for positive contacts while at the same time feeling that he is quite often rejected by the other group-members, whilst $y$ seems both to expect and receive positive support from his surroundings, surroundings of which he himself is partly rather critical. The specific relation depicted is, then, fairly typical of the more general social choice behavior and the more general social expectations of the two individuals.

### E. *A comparison between the relational language outlined here and the relational language of* STOLTENBERG

Whilst there has been very little general interest in making the verbal description of sociopreferential structures precise, one important exception has to be mentioned. STOLTENBERG (1951) has criticized the technical language of conventional "sociometry" for being "viel zu dürftig" and — what is more important — made a series of proposals in order to improve it. As these improvements are unusually systematic, we will make a comparison between STOLTENBERG's terminology and the language presented here. We will try to translate some of his terms into our symbols and, moreover, attempt an evaluation of the advantages and disadvantages of both systems. We will occasionally give three translations: literal translation (*L*), our verbal correspondence (*V*), and our symbolization (*S*).

#### a. *Main categories of terms*

STOLTENBERG presents his terminological innovations in three categories: *Schaft*, *Schnurwerk*, and *Kettwerk*. A literal translation is somewhat difficult (e. g., "-ship", "string-structure", and "chain-structure"), but the meaning is clear (*V*: plurel, one-way relations, two-way relations).

#### b. *"Die Schaft"* (*the plurel*)

STOLTENBERG distinguishes between *Wählschaft* (*L*: "choose-ship") and *Gewähltschaft* (*L*: "chosen-ship"). When the similarity is conscious, he speaks of *Wirschaft* (*V*: we-plurel; our term in this case being inspired by STOLTENBERG), which then may be subdivided into *Wirwählschaft* and *Wirgewähltschaft*. Interpreting his terms as referring to positive choosing, and, indicating the special individual as $y_1$, we see that *Wählschaft* corresponds to "$y_1$-choosing plurel" (*S*: $(x)(xPy_1)$), *Gewähltschaft* to "$y_1$-chosen plurel" (*S*: $(x)(x\bar{P}y_1)$), *Wirwählschaft* to "$y_1$-choosing we-plurel" (*S*: $(\acute{x})(xPy_1)$), and *Wirgewähltschaft* to "$y_1$-chosen we-plurel" (*S*: $(\acute{x})(x\bar{P}y_1)$). The STOLTENBERG terms for relational plurels seem very useful as far as they go; their obvious advantages are their freedom from testdistal hypotheses and their avoidance of the vagueness of everyday terms. Unfortunately, STOLTENBERG does not distinguish between positive, negative, and indifferent attitudes. Moreover, in his proposal, there are no terms for ordinary "socioperceptual" plurels, no possibility of making a distinction between such different types of plurels as, e. g., $(x)(xPy_1)$ and $(x)(xPy_1y_2)$ and $(x)(xPy_1 + y_2)$, and, finally, no attempt to deal with relational plurels in which the common element is the kind of relation only.

### c. "*Schnurwerk*" (*one-way relations*)

The smallest unit of one-way relation (*V*: one-way dyad; *S*: $xPy$) is called a *Wählgar*; a sequence of such units (*V*: one-way open polyad; *S*: $Pxyz$, $Pxyzu$, etc.) is called a *Wählschnur*. A closed sequence (*V*: one-way closed polyad; *S*: $Pxyzx$, $Pxyzux$, etc.) is designated as a *Wählreif*. A *Wählbüschel* is the name for a person together with his chosen group members (*V*: outgoing one-many relation; *S*: e. g., $xPyz$), whereas a *Wählbündel* is the name for a person together with his choosers (*V*: incoming one-many relation; *S*: e. g., $x\bar{P}yz$). STOLTENBERG's interest has focused on central concepts and he has clearly separated the fundamental variations. We regret the omission of different *kinds* of relation (positive, negative, indifferent), and the omission of "*socioperceptual*" relations. Moreover, by his method we are unable to symbolize *indirect* (several-step) relations.

### d. "*Kettwerk*" (*two-way relations*)

The smallest unit of two-way relation (*V*: two-way dyad; *S*: $x\bar{\bar{P}}y$) is called a *Wählnis*; a sequence of such units (*V*: two-way open polyad; *S*: $\bar{\bar{P}}xyz$, $\bar{\bar{P}}xyzu$, etc.) is called a *Wählkette*. A closed sequence forms a *Wählkranz* (*V*: two-way closed polyad; *S*: $\bar{\bar{P}}xyzx$, $\bar{\bar{P}}xyzux$, etc.). Several people, every one of whom has a mutual relation with everyone else is named a *Wählkreis* (*V*: two-way all-all polyad), and, moreover, a *Klicke*

(*V*: a *conscious* two-way all-all polyad; "we-group"), if the members are aware of this fact of all-all mutuality. Individuals who are both *Büschel* and *Bündel*, form an *Ecke* (*V*: two-way one-many relation; *S*: e. g., $x\bar{P}yz$).

### e. *A general evaluation*

STOLTENBERGS language system is highly laudable in several respects: (a) It is systematic in stressing the main categories of relational conceptions by using the terms *Schaft*, *Schnurwerk*, and *Kettwerk*. (b) It is testproximal in its operational definitions of different structures in terms of choices. (c) In several cases it tries to avoid everyday terms by innovations. In certain other respects we find shortcomings: (a) It is definitely not international, using words such as *Schaft*, *Gar*, *Nis*, etc., which are difficult to translate. (b) In several cases the terms chosen are difficult to remember due to a somewhat arbitrary choice of everyday words. (c) The system is inflexible since it coins a new term for every new concept instead of using a small number of fundamental symbols for basic relations, which may then be combined in different ways. (d) It is not sufficiently comprehensive, having only a few terms for relational plurals, no qualifying terms for different sorts of relations (choice sign, choice aspect, choice intensity, etc.), no terms for indirect relations, and no terms for simple "socioperceptual" relations.

In the relational language proposed above, most of the advantages of the STOLTENBERG system are retained, whilst most of the disadvantages seem to have been removed. The symbolic language used is definitely international, the basic symbols are few and relatively easy to remember (*P*, *N*, *I*; —, =, ´, `, ˇ), its flexibility and its comprehensiveness are very great. A disadvantage may be that the formalizations may seem difficult to a person not used to relational logic, and that the formulae may be impractical in oral communication. For this reason, I have tried to find verbal correspondences to the most usual relational structures, which — after first being defined in terms of our symbols — may be used when convenience so demands. Some of these terms — mainly those which correspond to the STOLTENBERG terms — are summarized in Table 3.5.

## 3. A Testdistal Approach to a Precise Sociopreferential Language in Terms of Sociodynamic Predictions

The type of language discussed above is suited primarily to a direct testproximal description of the choice directions *in situ*. Its aim is to

Table 3.5. *Some fundamental sociostructural concepts and terms*

| Main type | | Sub-type I | | Sub-type II | |
|---|---|---|---|---|---|
| Present terms | Stoltenberg's terms | Present terms | Stoltenberg's terms | Present terms | Stoltenberg's terms |
| | | one-way relations ("string-relations") | Schnurwerk | two-way relations ("chain-relations") | Kettwerk |
| dyad | — | one-way dyad | Wählgar | two-way dyad | Wählnis |
| open polyad ("row structure") | Reihe | one-way open polyad | Wählschnur | two-way open polyad | Wählkette |
| closed polyad ("ring structure") | Runde | one-way closed polyad | Wählreif | two-way closed polyad | Wählkranz |
| all-all relation ("web structure") | — | one-way all-all | — | two-way all-all | Wählkreis |
| one-many relation ("bundle structure") | — | outgoing one-many relation | Wählbüschel | two-way one-many relation | Wählecke |
| | | incoming one-many relation | Wählbündel | | |

N. B. Polyads may be further differentiated into 3-person polyads (triads), 4-person polyads (tetrads), etc. A closed triad may be called a triangle, a closed tetrad a square.

compress the choice data into short and precise expressions, whilst avoiding hypothetical interpretations and predictions. This type of language is a basic one, giving the "pure" empirical facts. When we want to proceed from the sociopreferential test-situation *temporally* (making predictions about later choice behavior in similar situations) or *factually* (e. g., making predictions about interaction behavior), we use these primary choice data as our starting-point, but we introduce different sets of interpretations (translations). One general interpretational frame of reference which seems to be suitable to serve as a basis for predictions about sociopreferential data is KURT LEWIN's theory of field forces. (See, e. g., 1935, p. 66 et seq., p. 114 et seq.; 1938; 1951, chap. I, IX.) A formal technical vocabulary based on LEWIN's conceptualization and adapted to sociopreferential data has been proposed by the present author (BJERSTEDT 1953; cf. also 1956). The reader especially interested in this approach is referred to these texts and to the analysis of "choice reversals" in chap. 6 below.

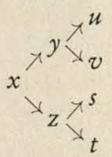
## III. PICTORIAL CONDENSATION (SOCIOPREFERENTIAL DIAGRAMMATICS)

### 1. Introduction

Space thinking, thinking with reference to spatial root metaphors, is fundamental both in everyday language and in scientific work. Logical terminology and Lewin's field dynamic vocabulary, both utilized in the previous section, are largely derived from ideas of spatial relations. In logic use is often made of an "unofficial but pictorially suggestive way to represent sets of ordered pairs by *arrow diagrams*" (Gregg 1954, p. 13). If $x$ gives $y$ a positive choice, this may be designated by

$$x \xrightarrow{P} y,$$

in which $x$ is shown by the *labelled arrow* to be *P-paired* with $y$. When we deal with a complicated structure, diagrams are sometimes more quickly grasped than the relations expressed in a formal vocabulary. The relational structure $xPy$ & $xPz$ & $yPu$ & $yPv$ & $zPs$ & $zPt$ may be compressed thus: $xPyz$ & $yPuv$ & $zPst$, but is as a rule more easily understood when condensed graphically as follows:



The arrow diagram, then, seems to fulfil the demand of the analysis-synthesis criterion, furnishing us with a surveyable, but still exact picture of complicated data. Therefore diagrams of this or a similar kind have been used from time to time for depicting interpersonal relations disclosed by means of spontaneous communication or observation (Bernfeld 1922, Hetzer 1926; cf. Höhn & Schick 1954). When Moreno introduced the arrow diagram for visualizing the results of his choice situations, this technique quickly gained popularity and has remained one of the most conspicuous characteristics of preferential sociometry. A *sociogram* is, according to Moreno (cf. 1934, p. 432; 1953, p. 719), a map which shows the interpersonal relations in a group; on this map, the individuals are symbolized by circles, squares or triangles and the relations between them with arrows or lines of different colors or form.[7]

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[7] The term *sociogram* has been used for other research objects besides interpersonal preferences and for other research methods besides pictorial condensation (cf., e. g., Lochner 1927, Engelmayer 1952, Wartegg 1953).

## 2. Different Types of Diagrams

Certain modifications and improvements of MORENO's original sociograms have been made from time to time. When discussing different kinds of diagrams, it may be of some use to distinguish the following main types:

(a) *first-order diagrams*, in which only individual-individual relations are depicted;

(b) *second-order diagrams*, in which only relational summaries are depicted;

(c) *third-order diagrams*, in which both individual-individual relations and relational summaries are depicted; and

(d) *diagrams for extra-sociopreferential comparisons.*

In the following sections some comment will be made on these different types of diagrams.

## 3. First-Order Diagrams: Individual-Individual Relations

In the first-order type of diagram we are only concerned with the choice structure. Two main problems are encountered: (a) how many data should be included, and (b) how should the data be arranged?

### A. *The problem of inclusiveness*

When trying to depict the preferences diagrammatically, we must often exclude certain data in order not to make the picture too confusing. We may, for instance, select only mutual choices or only first choices, etc. The exact procedure depends on the size of the group and on the intention of the diagram. It seems especially important always to inform the reader what kind of data is presented in the diagram. With differing selection principles, diagrams of the same group may look very different.

Sometimes MORENO used a sociopreferential situation in two phases. The Training School investigation focused on choices of individuals to live together in the same "cottage". A diagram designed on the basis of this choice situation might be called a *primary sociogram.* However, when a positive choice was given a non-choice rejoinder, MORENO held separate interviews about the nature of the non-choice: "How do you feel about living in the same cottage with . . .? Say 'Yes, No, or Indifferent'." (1934, p. 77). The attitude, earlier classified as indifferent, could then be seen to be sometimes positive and sometimes negative. Including the results of the interview in our diagram, we obtain our *secondary sociogram*. Of course, such a follow-up of the primary choice questioning is always of interest: the character of "non-choice" may often vary. However, it is important only when the choices have been arbitrarily limited (since an individual then could very well have chosen more individuals) and when the choice area is so large that it is unsurveyable (since the individual then might perhaps have simply forgotten someone). In a school class where the choice area is limited to the class itself and where unlimited choice possibilities are given, this type of follow-up is not necessary. When it is used, it is important to avoid certain pitfalls in the reading of the diagram. The follow-up assumes a *sub-choice level of positivity or negativity*, disclosable by an oral interview focusing on the specific individuals one at a time. But this interview selects only those cases where a positive choice has been given a non-choice rejoinder. What is defendable and sometimes even of the utmost importance when we deal with a single individual's reactions and adjustment in a group, is transformed into a methodological error, if general statements about the choice structure in the class are based on this technique of interviewing without observing differences between choice level and sub-choice level of attitude. If *x* chooses *y* and *z*, both of whom give no choice to *x*, and if *y* in the interview communicates a positive attitude whereas *z* does not, it is of course defendable to say that *y* is more positive than *z* (in an operational sense). But what about the individual *u*, who was not chosen by *x* and was therefore never interviewed? It is clearly wrong to say that *u* is less positive than *y*, as *u* and *y* are not subjected to the same test-situation. But sociograms including *sub-choice positivity and negativity* which are depicted by the same method as the primarily reported relations are easily misinterpreted in the way just mentioned. It therefore seems important either (a) to use secondary sociograms only for the small group ("*social atom*", MORENO 1934, p. 432) around a specific individual in whom we are interested, excluding the individuals who neither give choices to him nor receive choices from him (this was how MORENO used them) or (b) to *employ different techniques* (different spatial symbols) for depicting relations disclosed by the primary technique and by the secondary interviewing. It is of course not impossible to ask *all* the individuals about *all* their non-choice relations. A *tertiary sociogram* based on such a procedure might be of interest for certain kinds of intensive analysis in smaller groups and avoids certain difficulties of the secondary type of diagram.

To conclude, then, when we deal with diagrams of the total choice area (*total sociogram*), primary or tertiary sociograms may be chiefly recommended, but when we deal with the nuclear constellation around an individual (*partial sociogram* of the "social atom"), secondary sociograms may be useful. However, in every case where the primary type is not used, this ought to be stated explicitly, and a special kind of symbolization for the sub-choice level of attitudes is recommended.

## B. *The problem of arrangement*

The sociogram may be regarded as an attempt to visualize the social and psychological distance with the aid of the physical distance — we obtain what MEUTER has called "distance optics" (1951, p. 24). In the main, we do not find a direct application of the principle of distance in the usual sociograms: different kinds of lines are used to symbolize different types of distances. More direct applications are, of course, also possible. One might, e. g., symbolize first choices with a very short line, second choices with a longer line, etc. PROCTOR & LOOMIS (1951, p. 563 et seq.) speak about six kinds of dyadic relations as representing five different distances, viz., from the shortest to the longest: (1) $x\bar{\bar{P}}y$, (2) $xPIy$, (3) $x\bar{\bar{I}}y$ and $xPNy$, assumed to be equidistant, (4) $xINy$, and (5) $x\bar{\bar{N}}y$. The shortest social distance may be equated with some arbitrarily indicated physical distance on the diagram, the next shortest being given double this distance, etc. However, these rules are (as PROCTOR and LOOMIS remark) often difficult to follow. LINDZEY & BORGATTA point to the difficulties when the subject is placed in relation to "a large number of individuals" (1954, p. 412). In fact, it is often impossible to use the system as soon as we deal with more than two individuals, as is seen when trying to depict the relatively simple three-people structure $\bar{\bar{P}}xyz$ & $x\bar{\bar{N}}z$. And as sociograms dealing with only two individuals do not seem to be very useful, the strict adherance to the distance principle in the way just described does not seem to be very practical.

It was soon pointed out that sociograms of larger groups were frequently confusing to the eye. By redrawing diagrams trying to minimize the number of crossed lines (cf., e. g., BORGATTA 1951 a) and to make stars, triangles and squares appear as clearly as possible, this confusion may be somewhat diminished. But even then the pictorial structure depends to a certain degree on the person who draws it. Modifications introduced to overcome confusion and arbitrariness will be discussed in the section on third-order diagrams.

## 4. Second-Order Diagrams: Relational Summaries

### A. *Diagrams for sociostatic analysis*

a. *One-variable differentiation*

A diagram utilizing the number of positive choices received ($\bar{p}$) for micro-differentiation might depict each individual as a column in a *column diagram*, the height of the column being determined by the number of choices received.

b. *Multi-variable micro-differentiation*

*Column diagrams.* Two variables may be used in the column diagram by depicting positive choices received over a central line and negative choices received under it (HÖHN & SCHICK 1954, p. 21).

*Sociopreferential profiles.* Several variables are included in profile diagrams by McKINNEY (1948) and SMUCKER (1949). A disadvantage with these diagrams, making it less possible to compare various scores, is that individual values lying on or near the mean give a very broken profile in those cases — and they are very common indeed — where the means of the different variables are of different heights. In the profile technique proposed earlier by the present author (BJERSTEDT 1952 b, p. 259 et seq.) this drawback was remedied be the aid of standard scores. The variables included were those utilized in JENNINGS' choice-and-rejection pattern. When JENNINGS' plus-minus series gives a picture which is too crude in some way or other and, on account of arbitrary boundaries, inadequate for the special aim of our investigation, we may then "translate" it into the more exact language of the sociopreferential profile. This might of course be extended to include the six basic "socioperceptual" variables also. The same general principles (a standard score differentiation for the six variables employed by JENNINGS) were also followed by JOHANNESSON (1954, p. 167 et seq.), who, however, placed the values along the radii of a circle: the positive values in the upper half and the negative values in the lower half. The placing of positive and negative variables separately gives added surveyability, but the oblique and varying angles between the radii slightly lessen the possibility of our comparing the different variables.

*Surface diagrams.* A disadvantage of using any type of profile diagram for comparison between different individuals is that each individual is then represented by a long series of points. If we could decrease the number of points without lessening the amount of valuable information, the demands of the analysis-synthesis criterion would be better satisfied. It is obvious that it would be possible to plot the individual's position with only one point very accurately on ordinary graph paper, if we used only two variables: for instance, positive choices received and negative choices received (*bivariate scatter diagram*). As units we could use actual number of choices or else standard scores as in the profile. Since the number of received indifferences is dependent on the number of received positive and negative choices, the three variables $\bar{p}$, $\bar{n}$, and $\bar{\imath}$ could be depicted simultaneously on special types of paper (*trivariate scatter diagram* used by Lemann & Solomon 1952).

*Space models.* Of course, three-dimensional models enable us to include more variables for an exact one-point description of the individual's position (for attempts to use three-dimensional models, cf. Chapin 1950). On the other hand, three-dimensional models are not very practical for ordinary scientific communication on the leaf of a book or the page of a journal. In the following sections we will discuss instead other possibilities of depicting more than two dimensions in one plane. These types of diagrams we might call "quasi-space diagrams".

*Quasi-space diagrams.* It is of course not impossible to plot on graph paper an individual's value in more than two variables, if we use two points (for four variables) or three points (for six variables) — there may still be extra surveyability in comparison with the profile technique. The points of one individual may be joined with a line to denote their connection, and the different points may be allotted different shapes in order to avoid confusion. This sort of complex graph paper diagram seems best suited for the comparative depicturing of a small number of individuals simultaneously. The values of the sociopreferential profile may be plotted directly on such a diagram. Let us, for the sake of simplicity, consider a few fictitious and, by their very extremity, simple profile formulae of type IV.[8] Mr *A* (with the choice-and-rejection pattern + + + — — —) has the formula 55—90—90—/—45—35—30. Mr *B* (— — — + + +): 40—10—10—/—55—80—85. Mr C (— — — — — —): 30—35—20—/20—25—20. Mr *D* (+ + + + + +): 80—85—90—/—90—95—95. Figure 3.2 gives their position in a three-point quasi-space diagram. Here

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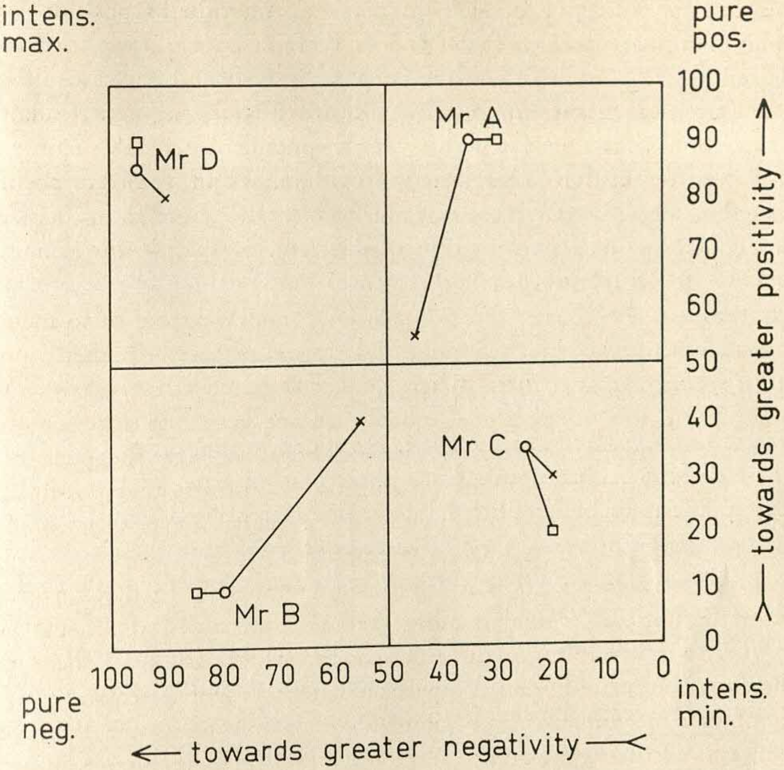
[8] Elsewhere (Bjerstedt 1952 b) four different levels of precision were distinguished with respect to sociopreferential profile formulae. Type I is identical with Jennings' choice-and-rejection pattern (using a two-part division of each variable). Type II is the same as the somewhat more differentiated pattern proposed above (using a three-part division of each variable). Type III gives the standard scores summarized (the figures being grouped, e. g., $p\bar{p}\bar{\bar{p}}$-$n\bar{n}\bar{\bar{n}}$), and type IV gives the most exact values (ordinary standard scores, grouped, e. g., $p$-$\bar{p}$-$\bar{\bar{p}}$-/-$n$-$\bar{n}$-$\bar{\bar{n}}$).



*Key:* $\times = p \& n$
$\bigcirc = \bar{p} \& \bar{n}$
$\square = \bar{\bar{p}} \& \bar{\bar{n}}$

Fig. 3.2. A three-point quasi-space diagram.

we not only see the special "corner position" of our individuals, due to the extremity of their patterns (Mr *A* has a "pure" positive pattern, Mr *B* a "pure" negative pattern, whilst Mr *C* approaches intensity minimum, and Mr *D* intensity maximum), we also clearly see the existing intra-individual differences. Let us suppose that we are interested in *reception-expansion differences*, i. e., differences between outgoing and incoming choices. Then we consider the o———x distance for each subject. The longer it is, the greater the reception-expansion difference. For Mr *C* and Mr *D* we find only very small differences, but for Mr *A* and Mr *B* the differences are quite great. When we try to explain our findings, we ought also to take into consideration the direction in which the distance line goes. We may for instance say that Mr *A*'s difference (less expansion than reception) shows a lack of wish to expand, possibly connected with his accepted position in the group, while Mr *B*'s difference (more expansion than reception) shows a clear wish — for the moment in vain — to expand from his "bad" position as a rejected individual. While we must remember that these examples are fictitious, they nevertheless show the possibilities for analysis. Starting from this type of diagram, we may in the same way discuss reception-reciprocation differences and expansion-reciprocation differences.

### c. *Multi-variable macro-differentiation*

*Surface diagrams and space models.* As stated in the section on different types of differentiation above, by a three-part division of the variables, the *XY*-plane may be simplified into a dedifferentiated nine-field table, and the exact *XYZ*-space into a 27-cube aggregate. Both these seem useful when we want a surveyable picture of individuals' positions with respect to only two or three variables.

*Quasi-space diagrams: The "Basic Chess-Board Diagram" ("Square Diagram, Type I").* Macro-differentiation with the aid of two- or three-part divisions seems, however, to be most useful when dealing simultaneously with more variables. An attempt to deal with all six variables of JENNINGS' choice-and-rejection pattern in one plane was demonstrated earlier by the present writer (BJERSTEDT 1952 b) under the name of a "chess-board diagram". Figure 3.3 shows its construction. In the left-hand margin the choice pattern is given, in the upper margin the rejection pattern. The individuals are placed in the different cells of the 8 × 8 square, whereby the three positive variables can be read from the left and the three negative variables from the top. The positive patterns are so arranged that the positive minimum is in the bottom row (low values in all positive variables) and the positive maximum in the top row (high values in all positive variables). Between these two extremes, the other variations in the positive values are so arranged that, where possible, they constitute a scale of increasing positivity from the bottom upwards. The rows II—IV each have one high and two low positive variables, the rows V—VII each have two high and one low. The difference in positivity between rows II, III and IV is less obvious. Their arrangement has been based on the following argument. Provided that an individual's own choices are reciprocated to a large extent, the degree of his own positive

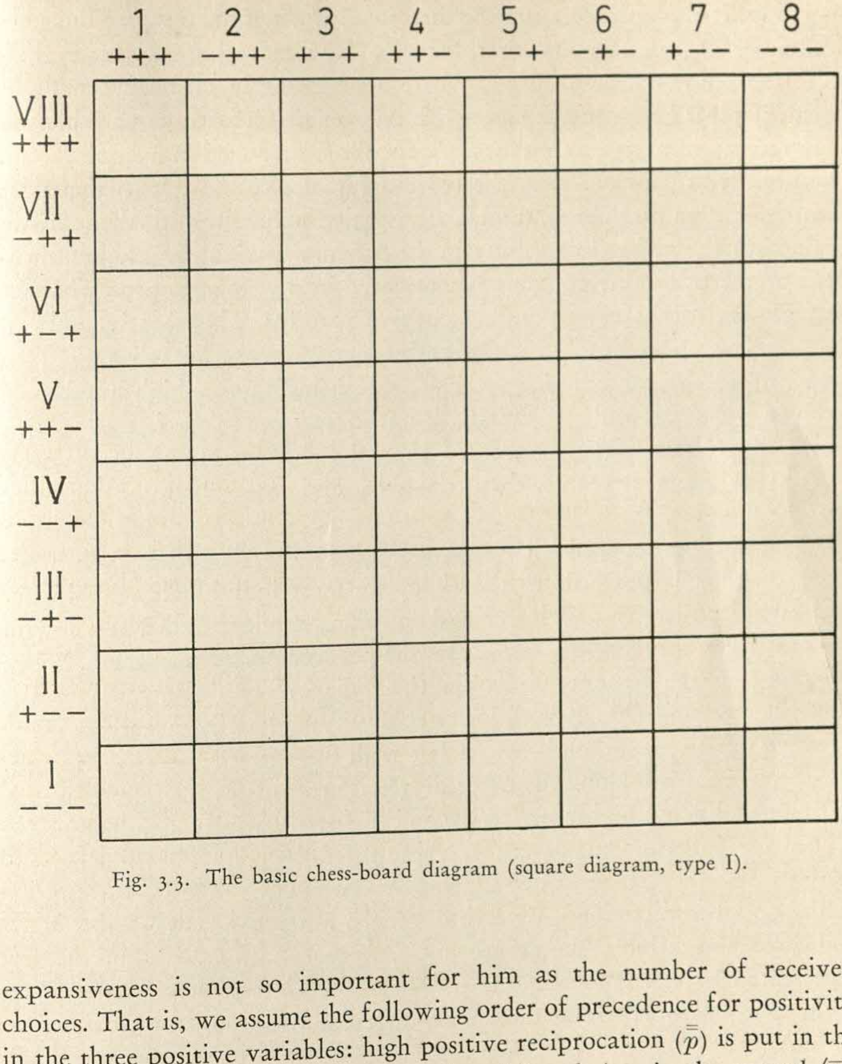


Fig. 3.3. The basic chess-board diagram (square diagram, type I).

expansiveness is not so important for him as the number of received choices. That is, we assume the following order of precedence for positivity in the three positive variables: high positive reciprocation ($\bar{\bar{p}}$) is put in the first place, a large number of received positive choices in the second ($\bar{p}$), and high positive expansiveness in the third place ($p$). This interpretation is admittedly not self-evident; nevertheless this order of precedence seemed more defendable than other sequences and was therefore utilized. Thus, in rows II—IV high positive reciprocation (— — +) is placed farthest from the positive minimum, and high positive expansiveness (+ — —) is placed nearest it. The same argument decides the arrangement of rows V—VII. The positive pattern — + +, where only positive expansiveness is lacking, is thus placed as the "most positive"; + — +, where the high number of received choices is missing, as the most positive after that, while the constellation + + —, where a high degree of reciprocation is absent, is placed nearest the cases with only one high positive variable.

The negative patterns (rejection patterns) are arranged in a similar way. The negative maximum is in the column farthest to the left (high values in all negative variables), and the negative minimum in the column farthest to the right (low values in all negative variables). The arrangement of the remaining columns is motivated in a way analogous with the arrangement of the corresponding positive patterns. The negative pattern + — —, which indicates high negative expansiveness, is thus "not so negative" as the constellation — + —, which indicates a high number of received rejections, and this, finally, is not so negative as the series — — +, which indicates a large number of mutual rejections. In the same way — + + is more negative than + — +, and + — + more negative than + + —.

The most pronounced changes occur along the diagonals. When we move diagonally upwards to the right, we meet individuals with higher and higher positivity and lower and lower negativity. Cell VIII: 8 with the pattern + + + — — — indicates the positive purity maximum. When we move in the opposite direction (i. e., diagonally downwards to the left), we meet individuals with lower positivity and higher negativity. The negative purity maximum is in cell I: 1 with the pattern — — — + + +. If we move instead along the other diagonal upwards to the left, we reach individuals having higher positivity and higher negativity simultaneously. A general intensity maximum is represented by cell VIII: 1 (pattern + + + + + +). If we move diagonally downwards to the right — i. e., in the opposite direction — we find, on the other hand, lower positivity and lower negativity simultaneously. A general intensity minimum is represented by cell I: 8 (pattern — — — — — —). (Cf. Mr *A*, *B*, *C*, and *D* in our example from the micro-differentiated quasi-space diagram above.)

*Quasi-space diagrams: Other types of square diagrams.* The chess-board diagram represents a $2^6$ survey (a two-part division of six variables). If we use a $3^6$ survey (a three-part division of the same variables, mentioned above as sometimes useful for normal and near-normal distributions), our square sociogram would be a good deal more complicated: instead of a cell system of 8 × 8, we would have a cell system of 27 × 27; but the principles of arrangement would be just the same, with the extreme types placed in the corners, the most positive at the top, the least positive at the bottom, the most negative to the left and the least negative to the right. The series of patterns would be as follows: + + +; o + +, + o +, + + o; o o +, o + o, + o o, — + +, + — +, + + —; — o +, — + o, o — +, o o o, + — o, o + —, + o —; — — +, — + —, + — —, — o o, o — o, o o —; — — o, — o —, o — —; — — —. Thanks to the systematic arrangement the field of 729 cells would not be very confusing in spite of its size. The large field would actually be clearly divided up into nine parts: the highly intensive, the pure positive, the pure negative, and the low intensive combinations in each of the four corner-fields; and the remaining five parts, together forming a cross, used for middle types: pure middle (at the center), highly positive middle (at the top), low positive middle (at the bottom), highly negative middle (at the left) and low negative middle (at the right). Further differentiation is of course possible, but, as a rule, cannot be recommended owing to the resulting complexity of the field (a $4^6$ survey would mean a cell system of 64 × 64). When we want a more differentiated system, however, the three-point micro-differentiation discussed above could sometimes be used.

### B. *Diagrams for sociokinetic analysis*

It is very important in stability examinations — the retest — to analyze not only the general stability of the sociopreferential variables with the help of correlations and the changes of single choices but also the changes of the position of single individuals. The coefficients of correlation are here only of a preliminary character: they show whether we can expect stability or not in general, but they do not show the special nature of the existing changes of position. Here, as is often true in other cases, the synthesis of the statistical character represents too high a degree of compression to be completely psychologically productive.

#### a. *One-variable differentiation*

*Micro-differentiation: Status-curves.* For each test-situation a status-curve may be drawn, in which every individual is represented by a point according to the number of positive choices received. When the status-curves for the new test-situations are drawn on the same paper, with the individuals retained in the same position along the base line, changes in status are easily demonstrable.

*Macro-differentiation: The space-time sociogram.* In the space-time sociogram (cf., e. g., JENNINGS 1937, p. 108) a macro-differentiation of the same variable is employed. Individuals are listed along the left-hand margin, the different test-situations along the upper margin. For each test-situation each individual is depicted by one of three possible symbols: one denoting "leadership state" (defined as 5 or more choices), one denoting "isolation" (0 choices), or one indicating 1—4 choices. By this dedifferentiated symbolization, a long series of retests may be analyzed simultaneously without decreasing surveyability.

### b. *Multi-variable differentiation*

*Micro-differentiation: Profile analysis and surface locomotions.* Even though positive choices received are perhaps the most important of our variables, it is not always profitable to remain satisfied with a one-variable analysis of instabilities. A multi-variable analysis may be made from sociopreferential profiles, surface diagrams, space models, or quasi-space diagrams. For analysis of a single individual or a few individuals, sociopreferential profiles or quasi-space diagrams seem best suited. For a somewhat larger number of individuals, this type of analysis would be unsurveyable, and the bivariate or trivariate scatter diagram might be used. Changes of position are then best represented as "movements" on the surface diagram, whereby each individual is represented by as many points as there are test-situations and these points are connected by arrows showing the temporal order.

*Macro-differentiation: Locomotions on the chess-board diagram.* However, as a rule every type of micro-differentiation will be somewhat unsurveyable as soon as we have more than a few individuals, since every choice situation then often gives different positions. In a macro-differential analysis small differences become negligible, with resulting gain of surveyability. The basic chess-board sociogram could very well be employed as a *sociomotion diagram.* In the introductory chapter, we cited the very common assumption that high choice status is correlated with better general adjustment, a proposition which will be further discussed below. If this assumption is right, we might speak about one sociopreferential position as *not* very *good* (low values in positive variables, and high values in negative variables), and another as *better* (high positive variables, low negative variables). It may be of interest to analyze such changes as can be interpreted to mean improvement or impairment of general adjustment. But as this adjustment-status correlation is only a hypothesis, we do not want to talk — testdistally — about *improvements and impairments in social adjustment*, but rather — testproximally — about *changes in socio-*

*preferential bonity*, operationally defined thus: high bonity means high values in the variables $p$, $\bar{p}$, $\bar{\bar{p}}$, and low values in the variables $n$, $\bar{n}$, $\bar{\bar{n}}$.

Suppose that we want to depict a series of sociopreferential tests in a certain group. The six-variable position of the individual is given, e. g., by one circle for each test-situation, and the "movements" are represented by arrows.

The sociopreferential bonity of the changes of position (the bonity of sociomotion) is then clearly indicated by the direction of the arrows and may be represented as follows:

I. *Towards higher numbers of rows or columns: relatively higher sociopreferential bonity.*
   1. directly upwards (towards higher Roman figures): higher positivity with a steady degree of negativity.
   2. directly to the right (towards higher Arabic figures): lower negativity with a steady degree of positivity.
   3. diagonally upwards to the right (towards higher figures of both kinds): higher positivity and lower negativity simultaneously.

II. *Towards lower numbers of rows or columns: relatively lower sociopreferential bonity.*
   1. directly downwards (towards lower Roman figures): lower positivity with a steady degree of negativity.
   2. directly to the left (towards lower Arabic figures): higher negativity with a steady degree of positivity.
   3. diagonally downwards to the left (towards lower figures of both kinds): higher negativity and lower positivity simultaneously.

III. *Towards higher numbers of rows and lower numbers of columns or towards higher numbers of columns and lower numbers of rows: change of bonity non-existent or uncertain.*
   1. diagonally upwards to the left: higher positivity and higher negativity (greater general intensity).
   2. diagonally downwards to the right: lower positivity and lower negativity (lower general intensity).

### 5. Third-Order Diagrams: Individual-Individual Relations and Relational Summaries

As mentioned above, the conventional sociogram depicting individual-individual relations by means of arrows has often been criticized not only for its confusing appearance when used in larger groups, but also for its arbitrariness. The absence of formal rules about how to construct the diagram means that the adequacy of any single sociogram depends too much on the skill of the investigator. Moreover, diagrams drawn by different investigators from the same primary material may take on very different appearances, as long as the placing of identification symbols is quite arbitrary or only determined by vague principles. Confusion and arbitrariness may be lessened by arranging the identification symbols according to some explicit rule. In this section we intend to deal with diagrammatic techniques, where the arrangement principle is to use one or more of the variables for relational summaries.

### A. *One-variable framing*

One fairly common principle has been to give the most chosen a specific position — either in the middle, at the top, or at the bottom (cf. MORENO 1934, RASMUSSEN & ANDERSEN 1950). Another way of utilizing the $\bar{p}$-scores so as to make the overchosen more conspicuous is to employ identification symbols of various sizes, the size being directly determined by the number of positive choices received (cf. YOUNG 1947, POWELL 1951).

From this type of diagram it is only a small step to diagrams with lines separating different categories of individuals. The most simple kind is the *stratified sociogram*, where a three-part macro-differentiation of the $\bar{p}$-variable is utilized (cf., e. g., SMUCKER 1947). The best known type, however, is NORTHWAY'S "*target diagram*", (NORTHWAY 1940, p. 149; 1951; BRONFENBRENNER 1944 b). Even here the starting-point is a macro-differentiation on the number of positive choices received, but levels of choice reception are not arranged as simple strata but as areas of a target, the highest level being in the center, the lowest on the periphery. In comparison with the confusing criss-cross of certain of the older MORENO diagrams, the "target diagram" can rightly be regarded as a fundamental improvement, and its dramatic qualities in depicting "central" and "peripheral" group members are paramount. However, there is still a great deal of arbitrariness concerning the placing of the single identification symbol inside a special target area, and, moreover, only *one* sociopreferential variable has been taken into consideration. When one or both of these facts seem to make the "target diagram" unsuitable for any more special purpose, a multi-variable framing may be more useful.

### B. *Multi-variable framing*

Whilst for certain purposes a one-variable framing may seem to give too much room for arbitrariness, diagrams employing a multi-variable micro-differentiation often give too little room for arrangement and therefore are not always suitable for depicting choice directions. In this case, as often elsewhere, a multi-variable macro-differentiation is useful as representing a middle way. Of all the different possibilities of utilizing this design we will only discuss one here: the "chess-board diagram" as employed for depicting choice directions.

### a. *The "Centripetal Chess-Board Diagram"* (*"Square Diagram, Type II"*)

Whilst the basic chess-board diagram has great advantages in sociomotion analysis, it has certain disadvantages in ordinary sociographic description of choice directions with the aid of arrows. The accumulation of choices in a peripheral cell such as VIII: 8 (the choice-and-rejection pattern + + + — — —) causes certain difficulty in surveying the choices which usually come from all parts of the diagram. The square diagram type II (cf. Figure 3.4) is designed to cope with this intricacy. The principle of its construction has been to rearrange the rows and columns so that individuals with pure positive combinations are given a central position, while individuals with pure negative or low positive combinations are given a peripheral position. The term chosen for this diagrammatic technique — the centripetal chess-board diagram — is intended to stress the fact that the most chosen individuals (as in NORTHWAY's target diagram) are placed in the center. As the two most positive rows have been placed at a middle level and as, similarly, the two least negative columns have been set centrally, the four-cell field in the middle represents positive purity maximum. The pattern + + + — — — of course is the absolute purity maximum, while — + + — — — implies a weakening of the least "essential" positive variable, + + + + — — a "defiling" through addition of the weakest negative variable, and — + + + — — both a weakening in positivity and an addition in negativity. For all these four patterns it is true, however, that the number of positive choices received and reciprocated is high, and the number of negative choices received and reciprocated is low. The variations are only in outgoing preferences.

The two most negative columns have been placed peripherally farthest to the left and to the right, and the two least positive rows have been given a peripheral position at the top and at the bottom. The remaining rows have been so arranged that an approach to the center implies higher positivity, and the remaining columns have been allotted such a position that a withdrawal from the center means higher negativity. In both cases the assumptions about the order of preference are the same as those go-

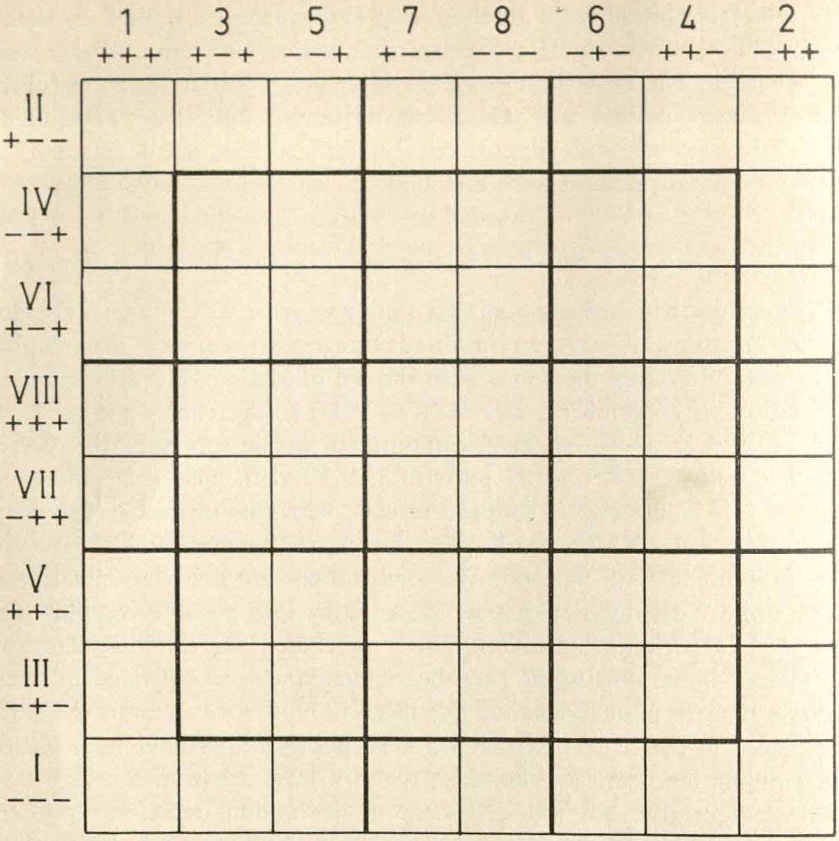


Fig. 3.4. The centripetal chess-board diagram (square diagram, type II).

verning the construction of the basic chess-board diagram (cf. above). When we move from the positive purity maximum along the diagonals, we meet, in all four possible directions, patterns with lower positivity and higher negativity. Negative purity maximum is represented by the four corner cells, where, of course, the pattern ——— +++ represents absolute negative purity maximum, while ——— —++ implies a weakening of the negativity, +—— +++ a "defiling" of the negativity through addition of the weakest positive variable, and +—— —++ both a weakening of the negativity and a positive addition. For all four patterns, however, it holds good, that the number of negative choices received and reciprocated is high. The variations —

just as in the four pure positive patterns — occur only in variables describing outgoing preferences.

When moving from the center to the left or to the right, we meet patterns with steady maximal positivity and higher negativity simultaneously (intensity maximum thus being placed in the center of the peripheral columns). If we move instead from the center upwards and downwards, we find patterns with steady minimal negativity and lower positivity simultaneously (intensity minimum being allotted its place in the center of the peripheral rows).

### b. *Possible modifications*

*Changes in proportional size.* In order to take into consideration the fact that *a priori* certain irregularities of distribution may be expected, it may often be appropriate to make certain modifications in the relative size of different sub-squares when using the diagram for depicting choice directions. Figure 3.5 shows one possibility. The least negative columns have been made wider than the others, because the number of individuals with great negativity is usually relatively limited. Moreover, we can predict that the patterns in rows IV and VI, which contain combinations with a relatively low number of positive choices received (below *M*) together with a relatively high number of positive choices reciprocated (above *M*), and the patterns in rows III and V, which contain constellations with a high number of positive choices received together with a low number of positive choices reciprocated, will be more uncommon than those in rows I, II, VII, and VIII. The latter rows with their more "natural" combinations have therefore been made wider.

*Changes in differentiation.* The diminished arbitrariness that the square sociogram or chess-board diagram gives also of course means a diminished freedom of arrangement and thereby, in addition, a greater difficulty in disposing a large number of choices surveyably. If we want to draw many arrows it may therefore in some cases be appropriate to use a "softened" (dedifferentiated) modification. Such a dedifferentiation may be made so that only certain boundaries of rows and columns are kept. It is most convenient in the first place perhaps to keep the more heavily drawn lines in Figure 3.4 and 3.5 while erasing the others, which means that 2—5 proximal patterns are unified and we obtain 17 larger fields instead of 64 smaller ones. This would mean greater freedom of arrangement, while even in this dedifferentiated form the square sociogram would give more distinct information than many traditional sociograms.

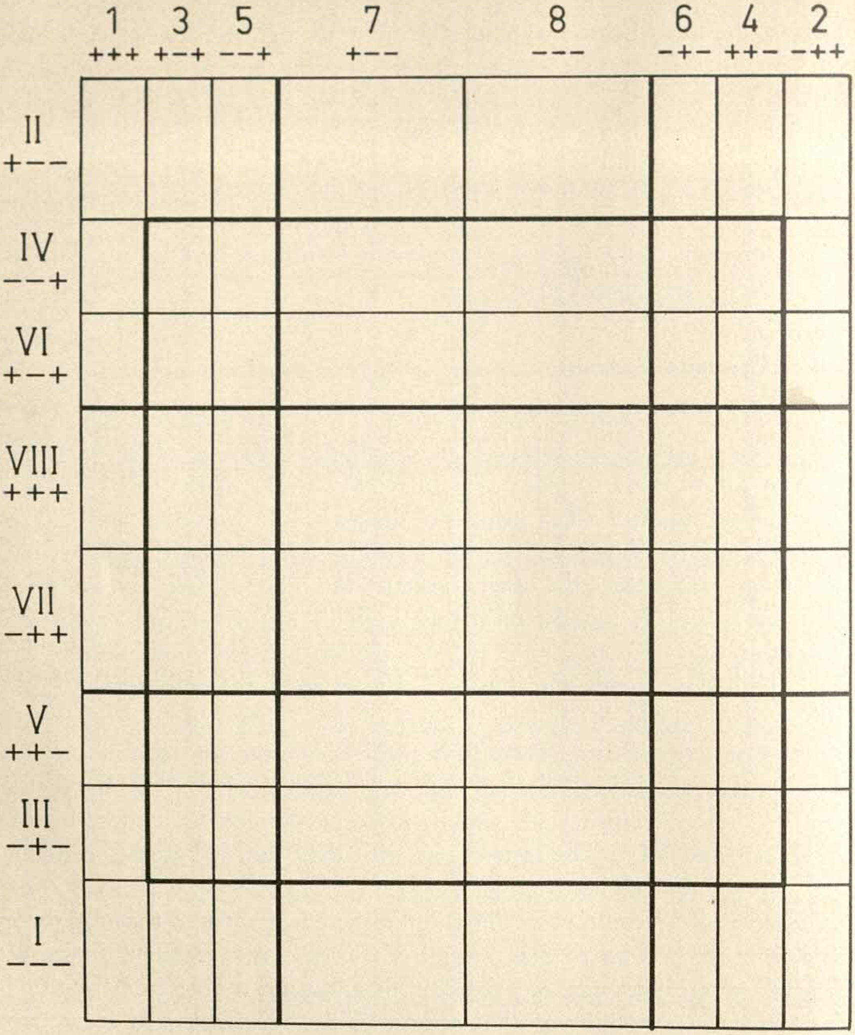


Fig. 3.5. The centripetal square diagram modified (square diagram, type III).

## 6. Diagrams for Extra-Sociopreferential Comparisons

In the third-order diagrams, relational summaries were used as arrangement principles. It is obvious that extra-sociopreferential variables might be used as well. When we want to investigate co-variations between one sociopreferential and one extra-sociopreferential variable or in-category preferences, such a course might be of interest. With respect to the freedom of arranging identification symbols, we may distinguish between three main types of diagram for extra-sociopreferential comparisons: those with unrestricted freedom, those with some limitation and those with complete predetermination. If the *kind of identification symbol* is used for giving extra-sociopreferential information (cf., e. g., MORENO 1934, LOOMIS 1948, ENGELMAYER 1952), or if the *kind of choice arrow* is employed for the same purpose (cf., e. g., FAUNCE & BEEGLE 1948), there is *unrestricted freedom of arrangement*, as far as the specific extra-sociopreferential variable is concerned. Using *pictorial barriers* for separating different categories of choosers (as, e. g., NORTHWAY & QUARRINGTON 1946), or an explicit *stratification* with respect to an extra-sociopreferential variable (such as social class, cf., e. g., COOK 1945; COOK & COOK 1950, p. 322 et seq.; POWELL 1951), our freedom of arrangement is *partly limited.*[9] A *strict limitation*, finally, is used when we start from an exact arrangement of individuals according to an extra-sociopreferential principle, as, for instance, the seating arrangement in the classroom, and then use arrows for choice directions in the usual way. This type of diagram has been employed when the investigator has intended to compare the preferential structure with the geographical (cf., e. g., MORENO 1934, WOLMAN 1937, SANDERS 1949, RICHARDSON 1951, JOHANNESSON 1954), or formal-organizational structure (cf., e. g., STOGDILL 1949).

## IV. NUMERICAL CONDENSATION (SOCIOPREFERENTIAL ARITHMETIC)

### 1. The Sociomatrix

### A. *The sociomatrix used as "primary tabulation"*

The single choice data may be tabulated on "*dyad cards*", one card being used for each possible pair of individuals (the usefulness of this procedure is demonstrated in RILEY, RILEY, & TOBY 1954). If we want to get a survey of the total choice area, all the dyad cards may be placed side by side according to some principle of arrangement. In so doing, we approach the sociomatrix technique, used even in the early German investigations (cf., e. g., REININGER 1932, p. 184). In the most common type of matrix the individuals are listed down the side as choosers (actors, incipients, subjects, egos) and across the top as chosen (actees, recipients, objects, alters). Thus, horizontal arrays (rows) contain choices made, and vertical arrays (columns) choices received. (The converse procedure may sometimes be found, cf., e. g., HÖHN & SCHICK 1954, p. 18—19.) The cells of the main diagonal will remain empty, since self-choices are as a rule excluded, leaving $N(N-1)$ "*dyad cells*" for relational information. DODD, who demonstrated his "*interrelation matrix*" in 1940 (a and b), has convincingly shown its rich possibilities of analysis (1942, chap. VII). Contrary to most kinds of arrow-diagrams, the matrix can also be used for very large choice areas and for many different kinds of choice data simultaneously (different choice aspects, different testing times, etc.). Instead of adding new "pages" of matrices for new choice aspects (cf. DODD 1948, p. 15), different numerals or signs may be introduced in the dyad cell for different aspects, whereby the specific position or the specific character of each numeral or sign denotes the choice aspect to which it refers (cf., e. g., BRONFENBRENNER 1943, p. 387). Similarly, prescribed, perceived, actual, and preferential relations may be symbolized simultaneously in a single cell (WESCHLER, TANNENBAUM, & TALBOT 1952; MASSARIK, TANNENBAUM, KAHANE, & WESCHLER 1953; cf. also OSTLUND 1953). Because of this inclusiveness of the sociomatrix, the investigator often uses this device as a primary tabulation of his data, even in those cases where he goes on to use other instruments for further analysis.

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[9] If a stratification is made from one sociopreferential and one extra-sociopreferential variable simultaneously, we may speak about *correlation sociograms* of macro-type; they can often be very useful for illustrative purposes.

### B. *The sociomatrix as a near-pictorial presentation of data*

Even though the sociomatrix does not have the direct dramatic qualities of the arrow diagram and to a far lesser degree allows a holistic view of a complicated field, nevertheless direct reading may often give fairly surveyable information. If addition signs are used for positive choices (the higher the preference level the larger the number of signs; cf. BJERSTEDT 1952 a), the different degrees of "density" give a near-pictorial presentation of the relational structure, facilitating the perception of "peaks" and "ridges" on the interrelation surface (cf. DODD 1942, p. 399 et seq.).

Mutualities are usually much clearer in sociograms than in ordinary matrices. Three methods may be used to make mutualities appear more efficiently. (a) Choices given may be recorded both in the row and the column of each individual (with different symbols). (b) The ordinary sociomatrix may be "folded" into a triangular shape in such a way that the cells common to two individuals coincide. This principle is used by BONNEY & FESSENDEN (1955). For many purposes this type of matrix may be advantageous, but certain disadvantages may be pointed out. Thus, column sums and row sums cannot be used in the ordinary simple way; choices received, for instance, are found by adding together the number of preferences in the right half of the cells of the row and the number of preferences in the left half of the cells of the columns. Moreover, "density reading" is less clear. (c) Choice reciprocations may be identified by specific symbols (the method used subsequently, cf. chap. 5).

### C. *The sociomatrix as a basis for rearrangement or arithmetical operations*

DODD distinguished between "pointed peaks" (high degree of "density" in a single cell) and "blunt peaks" (high degree of "density" in a cluster of adjacent cells), and stressed that, since the arrays are commutative, rearrangement of them can be used to discover such blunt peaks or "cliques" (*op. cit.*, p. 400). Rules for such rearrangement have been given by FORSYTH & KATZ (1946), L. KATZ (1947), BEUM & BRUNDAGE (1950), and BOCK & HUSAIN (1950). Interesting as these approaches are, the laboriousness of certain procedures makes them rather unpractical in their present form, even if mechanical computation may somewhat diminish the labor (cf., e. g., BEUM & CRISWELL 1947, L. KATZ 1950). As MORENO (1946b) has pointed out, certain kinds of structure are much more easily identified in conventional diagrams. — For certain purposes a very simple rearrangement of individuals may be of illustrative use: for example, the individuals may be ranked with respect to their standing in a sociopreferential (cf., e. g., HÖHN & SCHICK 1954) or in an extra-sociopreferential (cf., e. g., LONGMORE 1948) variable. The latter procedure may be useful in cases where we want to test cleavage hypotheses.

The most simple and the most important arithmetical operation from the sociomatrix seems to be to obtain totals for separate rows and columns. All the basic variables for relational summaries may be obtained by this procedure. — For the more special purpose of obtaining knowledge of indirect relations (*k*-step relations, of interest especially ror investigation of communication networks) the process of "matrix multiplication" has been used (FESTINGER 1949, LUCE & PERRY 1949, FESTINGER, SCHACHTER, & BACK 1950, LUCE 1950, ROSS & HARARY 1952; cf. for simple demonstrations CHABOT 1950, NEHNEVAJSA 1955). Although these developments may be of great importance in the future for solving specific communication problems, certain unsolved problems diminish the usefulness of these techniques for more general purposes (cf. LINDZEY & BORGATTA 1954, p. 418). Improvements of matrix analysis seem to be a definite desideratum, and much present research is devoted to matrix methodology (DODD, KATZ, and others).

## 2. The Intensity of Selected Phenomena: General Approaches

Whilst the sociogram and the sociomatrix approach often deals with the total complicated choice structure, most kinds of numerical condensation focus on selected phenomena. The following discussion will give some examples of numerical description of intensity, selected partly from individual-directed and partly from group-directed analysis.

### A. *Individual-directed analysis*

*The addition problem.* One of the most fundamental problems in all numerical condensation seems to be the problem of *preferential intensity of the single choice.* Most investigators employ conventional arithmetical operations (such as adding, subtracting, etc.) without discussing the assumptions which have to be made in so doing. With respect to intensity, is one choice of Mr *A* identical with another choice of Mr *A*, and are the choices of Mr *A* identical with the choices of Mr *B*? And if not, how is the adding together of different choices to be interpreted? Or, when choices are ranked and weighted, for instance, from 5 for first choice to 1 for fifth choice, is the first choice then five times more important than the fifth? And if not, how is the addition of weighted choices to be defended? Is not such weighting artificial?

In this connection it may be of interest to quote G. A. LUNDBERG's discussion of the "unit" concept: "All questions of naturalness, artificiality, or 'existence' of the units are completely obsolete because units are *defined* as symbols of our responses to *that which* evokes them." (1939, p. 69). If, in an attitude scale of radicalism, one person scores 5 and another 10, "one may be called 'twice' as radical as the other with precisely the same logic which declares that one stone is twice as heavy as another" (*op. cit.*, p. 72). Both expressions have a certain conventional scale as starting-point and are of a linguistic character. It is futile to ask whether the stone "really" is twice as heavy: we have constructed a balance and a scale and different individuals can register the result of the weighing — just as in attitude measurement we have made a test and a scale and different individuals can register the result of the testing. According to LUNDBERG, both kinds of measurement are thus comparable (cf., further, e. g., discussions by STEVENS 1951, EHRENBERG 1955).

However, this fact of logical comparability does not of course imply a statement of "scientific" or "practical" value. In order to be useful, a scale must be appropriate as a basis for prediction and meaningful description (cf., e. g., HUSÉN 1950). It may be a dangerous temptation too hastily to find consolation in the fact that all scales are conventional. Here as elsewhere there are *good* as well as *bad* conventions. In our case, choice addition and choice weighting can be defended *as far as* predictions and meaningful descriptions can be made from these procedures. The assumption that preferential intensity is identical in various cases can be defended *when* useful results may be gained by such a procedure, and *when* we are aware of making a *fictional* assumption (i. e., an assumption which is consciously incorrect or only approximately correct, but nevertheless accepted for a certain purpose; the use of "fictional" instead of "fictitious" for translation of VAIHINGER's "fiktiv", is proposed by REGNÉLL 1949, p. 58).

*The weighting problem.* When it is clear that both addition of weighted and addition of non-weighted choices imply fictional assumptions, which kind of analysis is to be preferred? The principle reason why many workers employ non-weighted choices is that such a procedure involves less labor and demands less complicated statistics. The main reason why other investigators prefer weighted choices is that they have a feeling that a first choice is considerably more important than, for instance, a third choice, and that this feeling has been given a certain substantiation by stability investigations (MORENO 1934, CRISWELL 1939 b, NORTHWAY 1943, BJERSTEDT 1953, JOHANNESSON 1954; cf. chap. 6 for further data). Among investigations which have employed weighted data we may mention ZELENY 1939, LIPPITT 1940, NORTHWAY 1946, BONNEY 1947, MAUCORPS 1949, and JOHANNESSON 1954. For most subsequent analyses here a weighting technique will also be used. A fact which lessens the importance of our selection of procedure is that status scores based on weighted and non-weighted choices usually show a high intercorrelation (cf., e. g., FRANKEL 1946; O.S.S. 1948, p. 185; JOHANNESSON 1954, p. 106). Therefore, for certain purposes non-weighted choices will be utilized, and both approaches will be compared. The weighting will be made in accordance with preference levels reported — this is the most common procedure. Other possibilities have also been discussed and certainly deserve further research (cf., e. g., L. KATZ 1947, 1953, CAMPBELL 1954). The possibility of using stability investigations for evaluating various weighting methods does not seem to have been sufficiently recognized; yet, such analyses might be rewarding when starting from field force arguments of the kind illustrated in BJERSTEDT 1953.

*Different kinds of scores.* The position of an individual may be given with respect to many variables which it is possible to summarize from a sociomatrix of preferences or preferential "perceptions". Most useful for our purposes will be the eighteen variables listed in Table 3.3 and 3.4 above and combinations of these. When simple scores are not directly used, indices giving a proportional evaluation may be employed. These are mainly of two types: (a) indices relating the actual number of reactions to the maximally possible number of reactions, and (b) indices relating the score of one variable to the score of another. — The maximal possible number of choices when using one choice aspect is, of course, $N-1$, since self-choices are excluded. Indices are then often given thus: for outgoing preferences $\frac{p}{N-1}$, $\frac{n}{N-1}$, $\frac{i}{N-1}$, $\frac{p+n}{N-1}$, for incoming preferences $\frac{\bar{p}}{N-1}$, $\frac{\bar{n}}{N-1}$, $\frac{\bar{i}}{N-1}$, $\frac{\bar{p}+\bar{n}}{N-1}$, $\frac{\bar{p}-\bar{n}}{N-1}$, etc. (In these expressions $p$, $n$, etc., are used to symbolize the values of a specific individual $i$; a more exact symbolization would therefore be $p_i$, $n_i$, etc.). When $c$ choice aspects are employed, the maximally possible number of choices will be $c(N-1)$. In using $k$-choice requests the indices for outgoing preferences cannot be used. Indices relating the score of one variable to the score of another are, for example, those furnishing two-way/one-way comparisons such as $\bar{\bar{p}}/p$, $\bar{\bar{p}}/\bar{p}$ and those dealing with "perception"/preference comparisons such as $\acute{p}/\bar{p}$, $\bar{p}/\acute{p}$, etc. Zeleny (1947), McKinney (1948), Smucker (1949), Proctor & Loomis (1951), Massarik, Tannenbaum, Kahane, & Weschler (1953), Nehnevajsa (1955), and others demonstrate different ways of establishing such indices for describing the relative position of a specific individual. It seems important to avoid giving these indices interpretations that are too general; a temptation to do so has often been caused by utilizing labels of a sub-pure kind, such as, for instance, the term "emotional satisfaction" for the index $\bar{\bar{p}}/p$.

## B. *Group-directed analysis*

The same two types of indices may be used to describe total groups. Since the main diagonal in any non-multiplicated sociomatrix will remain empty, the maximally possible number of cells is $N(N-1)$; and since each mutual pair is represented by two cells in the matrix ("twin peaks", Dodd 1942), the maximally possible number of mutual pairs is $\frac{N(N-1)}{2}$. If $S$ is used for "sum of", our examples of indices which employ the maximally possible number of reactions as denominator, may be given thus: $\frac{Sp}{N(N-1)}$, $\frac{Sn}{N(N-1)}$, $\frac{S\bar{\bar{p}}}{\frac{N(N-1)}{2}}$, etc. (the latter often employed as an "index of cohesion"). Indices relating the score of one variable to the score of another are, for instance, $S\bar{\bar{p}}/Sp$, $S\bar{\bar{p}}/S\bar{p}$, etc. "Group climate" may be estimated in terms of the positivity of dyadic relations, whereby each $xPPy$ may be given a value of 5, each $xPIy$ a value of 4, each $xIIy$ or $xPNy$ a value of 3, each $xINy$ a value of 2, and, finally, each $xNNy$ a value of 1 (PROCTOR & LOOMIS 1951). Other kinds of group-directed analysis utilize comparison with theoretical frequencies; a special section will be devoted to this approach.

## 3. The Chance Expectancy Model in Preferential Sociometry: A Specific Approach to the Description of Intensity

The chance expectancy model as a frame of reference for comparisons was early utilized by LAZARSFELD, MORENO, and JENNINGS (MORENO & JENNINGS 1938), and has been used and discussed by several later investigators (cf., e. g., BRONFENBRENNER 1943, 1944 a, CRISWELL 1943, 1947, 1950, SCHÜTZENBERGER 1948, EDWARDS 1949, MAUCORPS 1949, L. KATZ 1952, NEHNEVAJSA 1955). In the present section we will merely outline its basic theory and give examples of only a few simple descriptional formulae utilizing the chance expectancy model.

The probability $p$ that an individual chooses a specific individual by chance is, if $d$ choices are required, $\frac{d}{N-1}$, whereas the probability $q$ that he does not choose a specific individual is $1-\frac{d}{N-1}$. If unlimited choice possibilities are used, the mean of choices made, symbolized by $d'$, may sometimes be used as a rough approximation (cf. CRISWELL 1946). The probability that a certain individual chooses another, and that he does not reciprocate is $p \cdot q$, that he reciprocates $p^2$, and that they both are indifferent $q^2$. The expected number of reciprocated choices in a group will be $N(N-1)p^2$, the expected number of non-reciprocated choices $N(N-1)pq$. The theoretical number of mutual pairs will be $\frac{N(N-1)}{2}p^2$. The probability that a certain individual will receive one choice in the group is $(N-1) \cdot q^{N-2} \cdot p$. If three sub-categories $A$, $B$, and $C$ have $a$, $b$, and $c$ members respectively, the relation between ingroup and outgroup choices by members of $A$ is expected to be $\frac{a-1}{b+c}$ and the ratio between choices from $A$ to sub-category $B$ and $C$ is expected to be $b/c$.

The utilizations of chance expectancy arguments for descriptional purposes may be illustrated by examples borrowed from CRISWELL. An *index of integration* is obtained (1946, 1947) by dividing the ratio of the number of observed reciprocated choices ($Ro$) and the number of observed unreciprocated choices ($Uo$), by the expected ratio which is

$$\frac{N(N-1)p^2}{N(N-1)pq}.$$

As this expression may be simplified into $p/q$, the total formula for the index will be: $Roq/Uop$.

An index of *sub-category preference* was established by a similar procedure (1943, 1944). If $(a'a)$ is used for category $A$'s in-category choices, and $(a'b)$ for category $A$'s choices about category $B$, the index of sub-category preference may be written thus:

$$\frac{(a'a)\,b}{(a'b)(a-1)}.$$

If the value is above 1, category $A$ shows self-preference, i. e., "over-chooses" its own members as compared with the members of category $B$.

BRONFENBRENNER (1943, 1944 a) made use of the probability model for evaluating the significance of single scores. BRONFENBRENNER'S approach is well known through extensive discussion and criticism in preferential sociometry (cf., e. g., CRISWELL 1946, 1950, EDWARDS 1948, LOOMIS & PEPINSKY 1948, PROCTOR & LOOMIS 1951, THOMPSON, BLIGH, & WITRYOL 1951, GOTTHEIL 1952, LINDZEY & BORGATTA 1954), and will therefore not be further considered here.

## V. A FEW GENERAL CONSIDERATIONS ON THE ANALYSIS OF "SPECIFICITY" (A NOTE ON CERTAIN ASPECTS OF "RELIABILITY" AND "VALIDITY" IN PREFERENTIAL SOCIOMETRY)

A discussion of "reliability" and "validity" is usually regarded as indispensable within the behavioral sciences; at the same time, those two terms have often been used automatically and imprecisely. It has been especially unfortunate, partly that the same terms have been employed to cover many different operations, partly that the concepts have often been transferred from one field of application to another without sufficient analysis of the presuppositions for such a transfer. Both these points of criticism can be made about the use of these concepts in some sociopreferential investigations. A certain clarification may be gained by using the more differentiated terminology proposed by some authors (cf., e. g., EKMAN 1947, p. 145 et seq., p. 265; Technical recommendations 1954, p. 213 et seq., p. 228 et seq.; ZETTERBERG 1954, p. 36 et seq.). We will not consider these complicated questions in any detail here. However, as a transition to our investigations of the generality (translatability) of the status scores to follow below, we shall, in this section (a) make a few more general comments on the different kinds of statements which can be made from a test-situation, (b) give some considerations concerning the usage of the term "reliability" within preferential sociometry, and, finally (c) briefly discuss some instances of "spurious stability" and "spurious instability".

## 1. Different Kinds of Statements Made from a Test-Situation

Many kinds of statement may be made from a test-situation, among which we may mention five, symbolized as follows:

(a) $s = s$ (testproximal statement);
(b) $s = t(s)$ (testdistal prediction of a specific-homogeneous type);
(c) $s = t(S)$ (testdistal prediction of a general-homogeneous type);
(d) $s = t(\sigma)$ (testdistal prediction of a specific-heterogeneous type);
(e) $s = t(\Sigma)$ (testdistal prediction of a general-heterogeneous type).

A "protocol statement" about *A*, i. e., a non-interpretative report of *A*'s behavior, symbolized by *s*, means in the first place that *A* has behaved so that *s* is a true statement about him at this very time-space point ($s = s$). This is a testproximal assertion, and such an observation may be interesting in itself, in so far as the behavior registered may be regarded as significant *per se* (for instance, the voting behavior in a political election; statements about interpersonal preferences have often been treated on this level). However, frequently (both when starting from sociopreferential situations and, especially, when starting from personality testing) we wish to translate the statement into a more general language, into a testdistal assertion of some kind.

When the individual *A* has shown behavior such as *s* now and here, we perhaps wish to say that he has a *tendency* to show this specific behavior *s* in the same situations at other moments and in other places: $s = t(s)$

(the symbol "$=$" is used here as an abbreviation for "if the first statement is true about a specific individual, then the second statement is true about him, too"). In other words, we wish to demonstrate that the test behavior is not time-space-limited (or in more conventional terms, that our test "has" retest reliability or "high symptom value", cf. STERN 1911, p. 106).

But sometimes we also wish to say that the individual has a tendency to behave in a predictable way in *similar* test-situations. The behavior $s$ is then assumed to be included in a larger class of analogous behavior patterns $S$ so that the statement $s = t(S)$ is true. Thus, we wish to be able to make predictions about similar test-situations or everyday situations. (This is often referred to by the term "parallel test reliability", and a similar meaning is found in certain uses of the concept "validity" and in STERN's term "broad symptom value"; *ibid.*).

So far, the behavior from which we start and the behavior about which we wish to make predictions have been similar, even if the degree of similarity varies greatly, from solving an arithmetical problem by the same process, but using different numbers, to comparing expressive movements in test-situations such as the Mira-test, etc., and expressive movements in everyday situations (walking, writing, etc.). Sometimes, however, we wish — especially in certain types of projective test — to make predictions about behavior of a more heterogeneous character. Individuals who in our test-situation show the behavior $s$ have perhaps in earlier investigations tended also to show the behavior $\sigma$. Thus, we wish to say about our individual $A: s = t(\sigma)$. This prediction of a special-heterogeneous type is usually treated in terms of validity. (Cf. STERN's terms "homogeneous and heterogeneous symptomatics", *op. cit.*, p. 67—70.)

Finally, this statement may also be generalized. The individual is then said to have a tendency not only to show the specific behavior $\sigma$ but on the whole to show the behavior $\Sigma$ (that is, to show a series of behaviors similar to $\sigma$, but dissimilar to $s$): $s = t(\Sigma)$.

We must remember that the boundaries between specific and general prediction are rather vague. Still more important, however, is the fact that the boundaries between homogeneous and heterogeneous predictions are not definitive. It should not be quite inappropriate to assert that one of the tasks of theory and model building is to construct such a system of description and explanation that the correlations found empirically can be taken as signs of homogeneous, instead of heterogeneous, action tendencies, that is, to complete the statistical association with a logical and/or psychological association. Broadly speaking, a testproximal approach in scientific work may be said to indicate, either that the investigator remains satisfied with the statistical association, or that, for the time being, he refers to the logical and/or psychological prediction theory as only a hypothesis. Since, for instance, within personality research the empirical correlations are often rather low, this may be advantageous at the beginning, even if research ought not, of course, to *stop* at this point. Often we can also say that the single research worker is unable to test all hypotheses at the same time. Let us assume for a moment that he wishes to verify a certain testdistal statement *A*. At the same time he must occasionally employ a long series of other statements, the correctness of which he has not been able to check himself. It may then be advantageous to his own theory to say so: "Provided that the testdistal statements *B*, *C*, *D*, and *E* are verified, I have by my empirical investigation of the testproximal variables $a_1$ and $a_2$ verified the testdistal statement *A*. If, contrarily, one or several of the above-mentioned testdistal statements *A—D* should be demonstrated to be inadequately based, the fact is still left that the testproximal variables $a_1$ and $a_2$ have the relation *X* to the testproximal variables *b*, *c*, *d*, and *e*."

## 2. The Usage of the Term "Reliability" within Preferential Sociometry

Among the many types of coefficients referred to by the term "reliability measures", we may, in connection with *APA* usage, distinguish at least three: a coefficient of *internal consistency* (for a measure based on internal analysis of data obtained on a single trial of a test), a coefficient of *equivalence* (for a measure based on comparison between two alternate forms given at essentially the same time), and a coefficient of *stability* (for a measure based on a comparison between test and retest with an intervening period of time).

The first two types of procedure have not often been applied to sociopreferential research (cf., however, e.g., GROSSMAN & WRIGHTER 1948, BASS & WHITE 1950, RICCIUTI & FRENCH 1951). *Internal consistency* coefficients may be obtained by dividing the choosers into two arbitrary categories, and then for each individual working out two scores for any variable, e.g., the choices received from category 1, and the choices received from category 2. Although results from this procedure may be interesting *per se* (and rather high coefficients have usually been found), nevertheless such a measure (showing how consistently an individual reacts to others or how consistently others react to the individual) cannot be used for more general conclusions about "reliability", since a high degree of consistency is not necessarily expected (cf. PEPINSKY 1949). Coefficients of *equivalence* may be obtained from a comparison between different choice aspects. But this measure also — though interesting in itself — cannot be used for more general statements about "reliability", since the opinion that all members ought to react similarly to different choice aspects is, of course, untenable.

The difficulty of obtaining meaningful internal consistency measures is regarded by CRISWELL to be partly an advantage, "since it will prevent sociometrists from remaining content with the more easily obtained internal consistency coefficient and failing to go on to the more fundamental long-term studies of change in test score" (1949, p. 293). Most studies reporting "reliability" measures are also concerned with *retest stability*. Individuals working with sociopreferential data are, however, apt to be irritated, if, without further discussion, low coefficients of stability, are immediately interpreted as disclosing "unreliability" of "sociometric tests" in general. Firstly, differences between different preference aspects, preference methods, and groups of subjects are so important, that no general statements can be made, even if the variable measured is specified. Secondly, investigators often have the feeling that such statements are based on wrong hypotheses about the object studied: this object is obviously not assumed to be constant, and changes in test results can therefore no more be considered to be solely dependent on instrument unreliability than can changes in position of the pointer of a barometer. According to PEPINSKY, "variation of choice behavior from one test to another . . . is not to be referred to as a function of 'test reliability', but of the relative stability of the behavior itself" (1949, p. 48; cf. STERNER 1953, p. 56—58), from which it follows that results of stability investigations cannot be used directly for estimations of the "goodness" of the test. HARMON considers PEPINSKY's opinion to be correct and further elaborates this point. The concept of reliability is based on the assumption that we are sampling from a universe of data, he says as an introduction, and on the idea that we wish to generalize, within known limits of error, from the specific sample of data to the universe from which the sample is drawn. According to HARMON, the data in a sociopreferential investigation are almost always directly descriptive of the universe itself: and in that case, the concept of errors in random sampling is relatively meaningless. As an example HARMON discusses a ballot in a public election. "If the votes are properly counted, the universe of pertinent data has been completely measured.

An inference as to what the voting behavior might have been the next day or week, or under different weather conditions, etc., has no relation to the 'reliability' of the measurement . . . the sociological variables would then be changed, and we would have a different experiment." (1949, p. 747).

### 3. "Spurious Instability" and "Spurious Stability"

However, even though it is recognized that a low coefficient of retest stability above all reflects "real" changes of "pure preferential orientations" (and hence may indicate good "validity"), nevertheless an assessment of stability is of the utmost importance, since the utility of our measure for predictive purposes is lessened to an important degree if the behavior studied is highly unstable from day to day. We wish to stress our expression "above all"; other causes of differences may also be found, and even if we accept the general view discussed here, it is an important task to eliminate such causes. What we wish to avoid, is not instability *per se*, but rather what we might call "*spurious instability*" (i. e., instability of our final scores in spite of "actual" stability in the pure preferential orientations) as well as "*spurious stability*" (i. e., stability of our final scores in spite of "actual" changes in the pure preferential orientations). This task is a complex one, and we do not claim to be able to analyze it fully here. However, we feel that it may be useful to approach this problem in terms of an analysis of a several-step operation, in which it is important to ascertain that disturbing factors are excluded as far as possible at every step in the process.

A rough picture of the operational sequence when dealing with sociopreferential data is given by Figure 3.6. We start from an initial hypothesis of the reaction background of the subject. This may be vaguely formulated, but usually contains ideas of some sort of "pure preferential orientation" subject to change due to influences from the environment (in contrast, the initial background hypothesis when dealing with "intelligence" tests seems from the beginning to have contained ideas of a more invariant "capacity", a fact which explains the difficulty of transferring the concept of "reliability" from the realm of intelligence testing to that of general personality tests and to that of sociopreferential data; cf. PEPINSKY 1949). The primary operation is the data collection process, which has to be considered as an interaction between subject and experimenter. The secondary operation is, of course, the description process (in which the experimenter tries to compress the data into

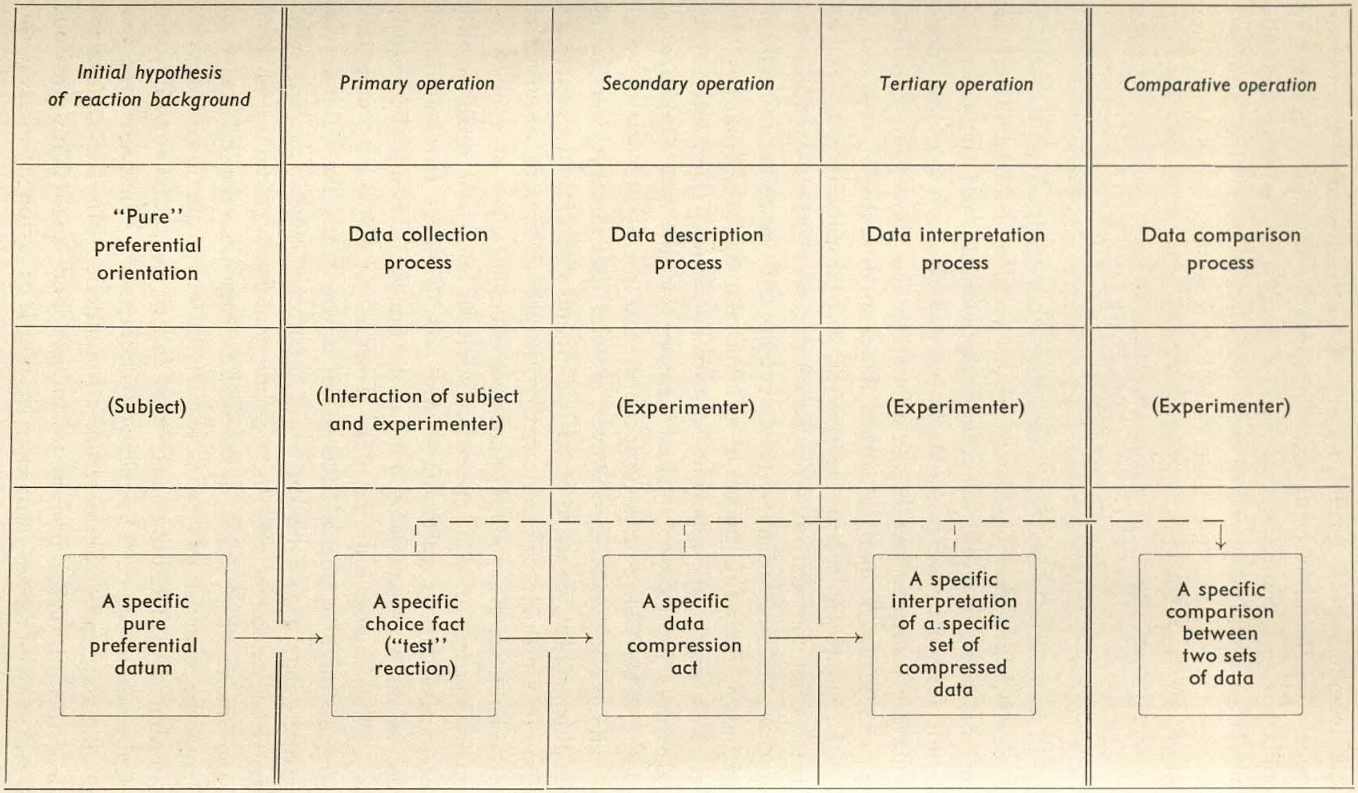
Initial hypothesis of reaction background
Primary operation
Secondary operation
Tertiary operation
Comparative operation
"Pure" preferential orientation
Data collection process
Data description process
Data interpretation process
Data comparison process
(Subject)
(Interaction of subject and experimenter)
(Experimenter)
(Experimenter)
(Experimenter)
A specific pure preferential datum
A specific choice fact ("test" reaction)
A specific data compression act
A specific interpretation of a specific set of compressed data
A specific comparison between two sets of data

Fig. 3.6. Operational Sequence when Dealing with Comparisons between Different Sets of Sociopreferential Data.

surveyable terminological, graphical, or arithmetical symbols), and the tertiary operation is the interpretation process. Finally, the comparative operation is the link combining one set of data with another, and this may start from any of the three steps mentioned: from the primary, secondary, or the tertiary operation (this fact is indicated in the figure by the arrow of short dashes).

### A. *Spurious instability*

Spurious instability may be due to disturbances introduced in one or several of the steps involved. Most difficult to avoid are differences in the *data collection process* between the two test occasions. (The difficulties of regrouping procedures have been elaborated upon above. But even the no-effect situation may involve certain dangers: it is difficult to avoid the repeated test-situation's being received by the pupils with a less favorable attitude than the first one [cf. GOTTHEIL 1952]. This complication seems, however, to be maximal when a promise of choice effect has not been kept.) — When using short intervals between two test-situations, the recall factor must be an important disturbing factor, since interaction choices are simple and personal and therefore not so easily forgotten as correct answers to a long series of problems in intelligence testing. The effect of the recall factor, however, can vary considerably depending on whether the subject wishes to repeat his old answers or to do something new. KOSKENNIEMI (1936, p. 104) once instructed the pupils of his class to name their friends and the classmates they did not like. The following day he informed the pupils "ganz betrübt" that his house-maid had thrown away the papers through carelessness. And so the pupils were instructed once more to answer a couple of questions about their friends. The result was that of 124 choices only 24 were identical. In connection with this disappointingly high degree of inconsistency, we should like to refer to an interesting observation by DODD (1944) in an investigation of interview reliability. Two categories of subjects were reinterviewed, one after 2 or 3 days and the other after 16 days. The average discrepancies between the first and the second interview were then 32 % and 24 % respectively, that is, within the time limits explored, longer intervals yielded more similar replies. DODD's interpretation of this unexpected finding was given in terms of the "new conversation" hypothesis: "In an immediate reinterview the informant prefers to amplify and qualify his previous answers rather than repeat them exactly, but after a longer interval the details of his former conversation have faded more and his replies will tend to repeat his basic answers" (p. 280). It is not impossible that the individual after having given a preferential report has some feeling of uncertainty as to whether his choices were the right ones, whether other people ought not to have been included instead (this uncertainty probably being related to the general phenomenon of "preferential anxiety" discussed above). If then a chance of choosing anew is offered before this initial "uneasiness" has faded away (and if the subject does not expect this new chance to be combined with any comparison between the two sets of responses; cf. the KOSKENNIEMI case, where the subjects were told the old papers had been thrown away), we might find an unusually low degree of choice consistency, an initial effect, which can be interpreted partly as spurious instability.

Hitherto we have been mainly concerned with inconstancies in the subject's reaction to a near-identical data collection process caused by variations in the subject's own expectations and attitudes. Inconstancies in the subject's reaction may of course also be due to differences in the actual data collection process, such as inconstancy in the instrument (the questions) or the instructions (in fact, the questions were not quite identical in the KOSKENNIEMI case discussed, which might have contributed to the low stability values).

However, spurious instability may not only depend on disturbances in the primary operations (data collection), but also on variances in the *secondary* and the *tertiary operation.* LINDZEY & BORGATTA (1954) employ the term "interpretive reliability" for "the extent to which the description of data by a given investigator, once the data are on hand, can be repeated by other investigators given the same data" (p. 420). As we wish here to distinguish between the testproximal data description (secondary operation) and the testdistal data interpretation (tertiary operation), we find this term somewhat confusing for our purposes; we are particularly interested in *between-description agreement* on the one hand and *between-interpretation agreement* on the other for the two sets of data (this above all means within-describer and within-interpreter agreement, but we ought also to demand possibilities for between-describer and between-interpreter agreement). Between-description agreement can be lessened by inappropriate communication vehicles such as non-standardized sociograms, vague terminology, etc. (cf. discussion above) which in some instances may result in obscuring the actual stability of preferential orientations. Between-interpretation agreement may be lessened by non-explicitness about the connections between data description and data interpretation.

### B. *Spurious stability*

A very high degree of stability is not always a desideratum from either practical or theoretical points of view: if we think that it mirrors actual preferential orientations, we have no reason to be optimistic about the possibility of social re-education; and if we think that it does *not* mirror the actual preferential orientation, the test is felt to be useless. Spurious stability is of course just as undesirable as spurious instability. In the case of the sociometric choice situation "temporal consistency of the test ... would be evidence for the lack of sensitivity and representativeness of the data it provided" (LINDZEY & BORGATTA 1954, p. 421).

In an investigation of workmate choices, REININGER instructed the children to write their wishes once more in a more unitary form on the grounds that their first notes were unsurveyable (1932, p. 182). This near-immediate retest is fairly similar to the one made by KOSKENNIEMI which we discussed above, but the result of REININGER's experiment was very different: the second reports were absolutely identical with the first. There may be several reasons for the different findings, but one cause is very probable: the children in REININGER's investigation knew that the teacher could compare their two reports, whereas the children in KOSKENNIEMI's experiment thought this was impossible. Spurious stability may also be due to factors other than those operating during the data collection process. Subjective ways of drawing a sociogram may make different structures seem more similar than they are, and when interpreting scores, the investigator may overlook the fact that stability of relational summaries does not *per se* say anything about the stability of single person-to-person relations.

Finally, it is very important to state not only preference aspect, preference methods, subjects and time interval — data which are not always included — but also the exact technique employed in the final step: the comparative operation. If this is not done, the coefficient or percentage value either has no information value at all to the reader or — if a wrong guess is made — leads spuriously to the conception of too high or too low a degree of stability.

Even though it may be difficult to know in some instances how far it has been possible to avoid spurious stability or spurious instability, nevertheless as a rule it seems possible to arrive at measures which are relatively free from unwanted influences, if we take care to analyze all the levels of operation from the points of view discussed here. When, after so doing, we proceed to analyze sociopreferential measures achieved from comparisons between different methods, different choice aspects and different test occasions, it should as a rule be clarifying not to use the ambiguous term "reliability investigation" for these comparisons, but instead to speak about research on the intermethodological, interaspectual, or intertemporal consistency ("translatability") of specific behavior characteristics.

## SECOND PART:

# SOCIOMETRIC CHOICE STATUS ANALYZED PRIMARILY FROM SOCIOPREFERENTIAL DATA ("THE ALFA EXPERIMENTS")

Chap. 4. Collection of data in the Alfa Experiments
Chap. 5. General characteristics of the sociopreferential variables
Chap. 6. The specificity of the preference situation
Chap. 7. Reports of choice expectation and choice motives

## CHAPTER 4

# COLLECTION OF DATA IN THE ALFA EXPERIMENTS

*Chapter Survey:*

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## I. SUBJECTS IN THE ALFA EXPERIMENTS

The introduction gave an outline of the main questions of this treatise. To be able to contribute any answer to these questions it is necessary to start with a relatively large sample of subjects. Many sociopreferential investigations have dealt with very limited samples (one or a few school classes), and the generalizations which have been made from these have sometimes had very shaky foundations. Furthermore, it is desirable that the sample contains different kinds of subjects. Then we are able to investigate the influence of certain fundamental extraneous variables on the sociopreferential process. For our purposes it seems important in the first place to be able to make comparisons between boys and girls and comparisons between different age levels and — further — to make these comparisons both in classes with and in classes without co-education.

On the basis of these considerations the "*Alfa Basic*" sample was selected. It was composed of 18 classes: one class of boys only, one class of girls only and one mixed class at each of the six Swedish grade levels 3 to 8 (roughly corresponding to the six age levels 9 to 14 years).[1] This part of the main sample consisted of 514 pupils (256 boys and 258 girls).

Besides the "Alfa Basic" we have the "*Alfa Additional*" composed of 12 mixed classes (two classes at each of the Swedish grade levels 3 to 8). These were selected from classes where the pupils had certain experience of group work in the school situation. The main advantages of this were the two following: (a) Observations of the children could be made in group work situations and the observation data thus collected could be compared with the sociopreferential data; in this way certain assumptions concerning the sociopreferential variables might be investigated. (b) In addition, the sociometric choice situations (choice of workmates) were here more realistic, that is, the children had more experience of the meaning of such choices. Therefore it would possibly be interesting to compare the results in these classes with data from classrooms where such experience did not exist. — This part of the main sample consisted of 353 pupils (169 boys and 184 girls).

A survey of the total main sample is given in Table 4.1. In this table several symbols are employed as abbreviated designations for different types of classes. These will be frequently used in subsequent chapters. The table uses the following symbols:

I. "*Alfa Basic*":

- (1) *M* Classes (= classes of boys only; *m*ale): 3m—8m;
- (2) *F* Classes (= classes of girls only; *f*emale): 3f—8f;
- (3) *MF* Classes (= mixed classes): 3mf—8mf.

II. "*Alfa Additional*":

- (1) *A* Classes: 3a—8a;
- (2) *B* Classes: 3b—8b.[2]

---

[1] In Sweden, children usually begin school at 7. The classes as a rule change teachers after the two first years, which are preparatory in nature, and the classes are then usually re-formed. From the third grade, however, the class often remains with the same teacher and with the same pupils. One exception is that in many schools some children (often the most intelligent) go to State secondary schools after the fourth or sixth year. In the so-called »*enhetsskolan*» the children remain in the same school.

[2] *A* and *B* Classes are *not* different in any systematic way and will therefore as a rule be treated together.

Table 4.1. Main Sample of Subjects at the Alfa Experiments:
The Distribution with Respect to Sex, Grade Level, and Classroom Units

| Sub-Samples | Sex | Grade levels | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | 3 | 4 | 5 | 6 | 7 | 8 | |
| "*Alfa Basic*": | | | | | | | | |
| *M* Classes | M | 27 | 34 | 23 | 26 | 26 | 19 | *155* |
| *F* Classes | F | 30 | 35 | 26 | 25 | 25 | 23 | *164* |
| *MF* Classes | M | 18 | 14 | 21 | 21 | 16 | 11 | *101* |
| | F | 20 | 20 | 11 | 16 | 14 | 13 | *94* |
| | M+F | 38 | 34 | 32 | 37 | 30 | 24 | *195* |
| "*Alfa Additional*" (*AB* Classes): | | | | | | | | |
| *A* Classes | M | 14 | 14 | 18 | 11 | 14 | 13 | *84* |
| | F | 17 | 17 | 13 | 16 | 16 | 17 | *96* |
| | M+F | 31 | 31 | 31 | 27 | 30 | 30 | *180* |
| *B* Classes | M | 16 | 15 | 17 | 12 | 16 | 9 | *85* |
| | F | 12 | 17 | 15 | 19 | 13 | 12 | *88* |
| | M+F | 28 | 32 | 32 | 31 | 29 | 21 | *173* |
| Total boys | | 75 | 77 | 79 | 70 | 72 | 52 | *425* |
| Total girls | | 79 | 89 | 65 | 76 | 68 | 65 | *442* |
| Total separately instructed | | 57 | 69 | 49 | 51 | 51 | 42 | *319* |
| Total co-instructed | | 97 | 97 | 95 | 95 | 89 | 75 | *548* |
| Total sum | | *156* | *166* | *144* | *146* | *140* | *117* | *867* |

Small letters are utilized for symbolizing single classes: for instance 3m, 4f, 6mf, 8b, whereas capital letters are used for comprehensive references: *M* Classes, *F* Classes, etc. The term "*AB Classes*" is sometimes used as synonymous with "Alfa Additional".

Altogether, the main sample in the Alfa Experiments consisted of 867 pupils. Of these 319 were separately educated (155 boys and 164 girls).

In addition to this main sample, we used certain extra classes for special methodological problems (cf. Table 4.2 and below, chap. 5—6).

## II. THE MAIN TEST-SITUATIONS IN THE ALFA EXPERIMENTS

### 1. Time and Place

The main choice situation that was used as a foundation for most of the subsequent analyses was arranged in all cases during the spring term.[3]

---

[3] The Swedish autumn term is from August to December, and the spring term from January to June.

Table 4.2. Extra Subjects Used for Specific Methodological Problems
("*Alfa Extra*")

| Problem | Class series | Class symbols | Sex | Grade level | Number of pupils | Will be further discussed |
|---|---|---|---|---|---|---|
| Formulation of sociopreferential questions | *Z* | Z1 | M+F | 4 | 33 | p. 177 |
| | | Z2 | M | 7 | 23 | |
| | | Z3 | F | 7 | 27 | |
| | | Z4 | M+F | 4 | 32 | |
| | | Z5 | F | 4 | 35 | |
| Different types of preference methods | *UV* | U | F | 5 | 28 | p. 196 et seq. |
| | | V | M | 5 | 33 | |
| Total number of pupils | | | | | 211 | |

Table 4.3. Survey of Main Test Occasions in the Alfa Experiments

| Class series | Classes | Testing time* |
|---|---|---|
| *M* | 3m—7m | 1950 |
| | 8m | 1954 |
| *F* | 3f—7f | 1950 |
| | 8f | 1954 |
| *MF* | 3mf—8mf | 1953 |
| *AB* | 3a—8a | 1954 |
| | 3b—8b | 1954 |
| *Z* | Z1—Z5 | 1953 |

* All tests were made during the spring term and as a rule around March 1st.

The reason was that the social life of the class ought by this time to have been stabilized to a certain degree, and therefore the sociopreferential analysis ought to have been able to disclose more essential conditions. As a rule, this main "testing" was made about March 1st, since a relative temporal similarity was considered to be of value in order to eliminate disturbing variables as far as possible.

The investigations of all the classes were not made during the same year. Instead the population increased by degrees (cf. Table 4.3). The oldest section is from spring term 1950 and consisted of ten classes (3m—7m; 3f—7f). The results from these were discussed in unpublished reports in 1950 and 1952 (cf. BJERSTEDT 1952a), and they were the starting point for the continued work and expansions. In spring 1953 the main sociopreferential questionnaires were distributed in six classes (3mf—8mf), and in spring 1954 in the remaining fourteen classes (3a—8a; 3b—8b; 8m, 8f). In several of our classes the sociometric choosing was made on repeated occasions (cf. below, the section on stability research).

The sociopreferential data for the *M* Classes and *F* Classes were collected in Ystad, for the *MF* Classes in Hässleholm, and for the *AB* Classes in Johanneshov (Björkhagens skola).[4]

## 2. General Considerations

The planning of the questionnaires was influenced by the considerations outlined in the chapter on primary methods above. The forms used are given in extenso later in this chapter. In this section only a few comments will be made.

### A. *Questionnaire I*

The main choice situation is outlined in Questionnaire I. The central *preference aspect* is to choose co-workers for group work at school. This aspect was selected primarily because of our initial interest in group work as an educational problem (cf. BJERSTEDT 1952 a). But even after our main problem was changed to investigations of interpretative assumptions concerning sociometric choice status, that is, from specific educational applications to basic theory and methodology, we found no need to change the preference aspect, as the choice aspect seemed central for the school situation — even more so in the later investigations of pupils with experience of group work. It might perhaps be objected that a more personal choice aspect would have been more interesting in mirroring to a lesser extent the prestige values connected with school work ability.

---

[4] Ystad and Hässleholm are small towns in South Sweden; Johanneshov is a part of the parish of Enskede in Stockholm. All three places have between 10.000 and 15.000 inhabitants, but Johanneshov has a somewhat different character from the other two, since it is possible to include it among the residential suburbs in the immediate vicinity of a city with 3/4 million inhabitants. There is one exception to the statements above: class 7mf was taken from Ystad, since there was no mixed class at this grade level in Hässleholm.

This objection might be answered thus: *firstly*, that it seems just as interesting to see to what extent formalized and non-formalized motives are combined in a formalized choice situation (differences between different age levels and different sexes may be of importance); *secondly*, that — as has been fully discussed above — aspects that it is *possible* to use for reconstruction of groups are often to be recommended even in cases where no such reconstruction is promised: choosing workmates is a more realistic choice situation and, in addition, less objectionable than many personal reports of liking and disliking; and, *thirdly* and finally, that, besides the main formalized preference aspect of workmates, we also used both personal and semi-personal aspects for comparative analysis (Questionnaires III and IV).

We had several possibilities of *specifying* in the workmate selecting situation. It was of course conceivable that some children would select different workmates for co-working in different school subjects: a boy who is good at mathematics, but shows bad results in writing, may be thought to be desirable in a mathematics group but not in a writing group. Such a specification could be continued: it is not impossible that some pupils would select different workmates for different sub-projects within a specific school subject, etc. However, it seems difficult or impossible to use the same questions in a sample of pupils from different grade levels if such a specification is made. A question which is very significant in one classroom may then be more or less meaningless in another. That was one of the reasons why we preferred the relatively non-specified ("broad") phrasing of the primary preference aspect (cf. below, Questionnaire I: *A*). With such a formulation, there might also be some hope of obtaining more varied and spontaneous motivations than would probably have been the case in a "narrow" question. (Several other advantages of the "broad" preference aspect are referred to in the general discussion on data collection above).

The question of *preference effect* was discussed at length above. Several of the reasons given for not promising reconstruction seem to be valid in connection with our problem. The most forceful reason was of course the practical difficulties which are involved when using a great number of subjects. But our wish to avoid report-distortion in the now-situation due to the influence of the knowledge that the teacher was to read the preferences, was *one* contributing reason. *Another* was our wish to avoid report-distortion due to irrelevant influences during a retest series ("the half-way realization"). Besides, in one category of school classes (the *AB* Classes) we were able to compare our hypothetical choice question with a recently performed non-hypothetical choice question. This seemed to be of methodological value.

The *preference area* was limited to the classroom, partly because choosing outside the class would have been less realistic in view of our preference aspect and partly because it would have made all investigation of two-way relations difficult.

In the discussion of *preference signs* above we found a growing interest among investigators in also using negative choice reports. For selecting individuals with extreme sociopreferential characteristics for our extra-sociopreferential comparisons in the Beta Experiments, such negative choice situations seemed to be of importance. It would also be of interest to see the reasons given by pupils for rejecting a classmate. In order to lessen resistance and prevent possible harmful consequences, absolute privacy and confidentiality were, of course, promised. In addition, the question was carefully formulated in order that resistant subjects should not be forced to make negative choices; no definite number was asked for. With respect to the rejection reports, it seemed to be a further advantage that the main choice aspect was not a personal one: the children ought to find it less disturbing to evaluate a classmate negatively in a circumscribed and formalized role.

The *preference method* for the negative reports was thus one of unlimited choice possibilities. In the positive choice situation it seemed of value to give the subjects a point of reference for the choice output (which in a formalized situation, of course, partly depends upon situational factors). At the same time a strict *k*-choice request would have limited our possibilities of exploration. Therefore it seemed important to allow the subjects to vary from this point in one direction or another. As is seen from the questionnaire, an "Order 3" request (*A*) is completed by a request for possible further choice wishes (*C*) — the two questions together amounting to what has been termed above a "floor limit" (For comparative purposes alternative questionnaires with quite unlimited choice possibilities were given in a few extra classes (cf. below). The number of choices employed — three — is partly an arbitrary choice in keeping with tradition in preferential sociometry, partly founded on considerations about its suitability for application in the classroom. There can hardly be any definitive and general statements about the optimal size of the classroom work group (cf. SCHNEIDEMAN 1945, p. 92). In educational experiments with free grouping in the classroom situation (cf. JAKIEL 1935, p. 46; FALK 1936, p. 170 et seq., 1952, p. 72 et seq.; LUSTENBERGER 1949, p. 75; KOSKENNIEMI 1950, p. 18 et seq.), groups of two, three, and four pupils are most usual; groups of four, based on the wishes of the pupils, were used, for instance, by Reininger (1932, p. 192) in constructing working units. Larger groups are, as a rule, made impossible by technical factors such as the characteristics of the furniture. Some experimenters (cf. Falk) recommend a group of three, since a group of two is often found to be a pure friendship group and larger groups have a certain tendency to divide into subgroups. It could be held, however, that such a subgrouping is not entirely a bad thing. It may be instructive that the pupils work in groups with a differentiated organization: the variation between individual work, the more intimate work between two, and the work between several pupils which demands that they use their powers of organization among themselves may be regarded as good social education. Be this as it may — and this is a question outside the present experimentation — in the present case the subjects were instructed to choose as if for groups of four.

*Work group leaders* are often used in educational work, sometimes with special tasks (cf., e. g., Schneideman 1945, p. 251; Koskenniemi 1950, p. 37 et seq.). The group leader system also has its drawbacks: there may be abuse of power, fighting between different leader personalities, and a slackening of responsibility on the part of other pupils; therefore chosen leaders are sometimes avoided. On the other hand, it may be said that social education also clearly involves education for roles of "democratic" leading and following (cf., e. g., Baxter & Cassidy 1943). In this chapter we do not of course want to give any advice for practical situations; we only want to show that our choice situations are realistic to the extent that they might be used for direct application. When a leadership question was introduced in the questionnaire (*B*), we did not give examples of the functions of the leader. Therefore the pupils could in part attribute different meanings to the question, which is thus in a way similar to a semasiological question of the following type: "In your opinion, what is the meaning of being a leader for a work group? Give an example of a pupil that is suited for this position!" The preference area in this case was restricted to the three pupils already chosen as co-workers.

*Preference motivations* were requested for all the choices (except the additional ones under *C*) by means of the simple question "Why?". General considerations both about the importance of choice motivation and about the difficulties of analysis have been given above.

### B. *Questionnaire II*

In the second questionnaire the perspective was reversed: the subject was not asked to choose, but rather to guess how the others had chosen with respect to himself (*A*, *B*) and which pupils received most positive choices (*C*). This questionnaire will be further discussed in chapter 7 below. It may be remarked even here, however, that guessing which pupils received most negative choices (a question which seemed logical in this connection) was excluded because of the risk of evoking unfavorable comment and focusing attention on pupils with adjustment problems.

### C. *Questionnaire III*

In questionnaire III a personal aspect (*A*) was used for purposes of comparison. It promised to be interesting to see whether the most desired workmates were also chosen most often as best friends.

The second part of the questionnaire (*B*), which may be termed "Prestige Guess-Who", gave some very simple questions of the general type: "Who is especially cheerful?", "Who is always willing to stick up for a classmate?", etc. By means of these, the sociometric choice status of certain pupils might be further elucidated and the spontaneous motivations completed. As a rule negative questions were not used, since the pupils would perhaps have been reluctant to answer them. Of course this questioning did not aim at any completeness.

### D. *Questionnaire IV*

In questionnaire IV, a semi-personal aspect was introduced (*A*). A series of questions was used to investigate similarities and differences between choice reports, "perception" reports, statements of usual interaction, and statements of interaction at a specific time-point. Such a comparative analysis promised further to elucidate the choice process.

## 3. The Forms Used

*Questionnaire I*

A. If you had the opportunity to choose three classmates with whom to work in a group, which three would you like to choose?

1. ........................................................ Why? ..................................................

..............................................................................................................................

..............................................................................................................................

..............................................................................................................................

2. .................................................. Why? ..................................................

..................................................................................................................................

..................................................................................................................................

..................................................................................................................................

3. .................................................. Why? ..................................................

..................................................................................................................................

..................................................................................................................................

..................................................................................................................................

B. If you were to choose one of those three as your group leader, whom would you choose? ..................................................
Why? ..................................................................................................................................

..................................................................................................................................

..................................................................................................................................

C. Perhaps there is in your class one or more in addition to those already mentioned whom you would very much like to have as co-worker(s). If so, write down his (her, their) name(s) here.

..................................................................................................................................

..................................................................................................................................

D. Not everybody likes to work with the same people. Perhaps there is in your class one or more whom you would not like to have as co-worker(s). If so, write down his (her, their) name(s) here.

..................................................................................................................................

..................................................................................................................................

Why? Write one name at a time once more and try to explain why you do not want him (her) as a co-worker!

..................................................................................................................................

..................................................................................................................................

..................................................................................................................................

..................................................................................................................................

*Questionnaire II*
*"Guess"*

A. Guess who would *like* to have you in his (her, their) work group(s)!

..................................................................................................................................

..................................................................................................................................

..................................................................................................................................

..................................................................................................................................

B. Guess who would *not like* to have you in his (her, their) work group(s)!

..................................................................................................................................

..................................................................................................................................

..................................................................................................................................

..................................................................................................................................

C. Guess who have received most *yes-votes*:

| *boys*: | *girls*: |
|---|---|
| 1. .............................................. | 1. .............................................. |
| 2. .............................................. | 2. .............................................. |
| 3. .............................................. | 3. .............................................. |
| 4. .............................................. | 4. .............................................. |
| 5. .............................................. | 5. .............................................. |

*Questionnaire III*

A. You have now chosen three *co-workers*. Here you may write the names of your three best *friends* in the class:

1. ..............................................
2. ..............................................
3. ..............................................

B. Write after each question the name of someone in the class whom you think the question applies to especially well!

1. Who is especially cheerful?

   ..............................................

2. Who is especially polite?

   ..............................................

3. Who is always willing to stick up for a classmate?

   ..............................................

4. Who is never quarrelsome?

   ..............................................

5. Who is always willing to help?

   ..............................................

6. Who shares willingly with others?

   ..............................................

7. Whom can other classmates always trust?

   ..............................................

8. Who is best suited to be prefect of the class?

   ..............................................

9. Who is the bravest?

   ..............................................

10. Who is the tidiest?

    ..............................................

11. Who most easily makes other classmates do what he (she) wants them to do?

    ..............................................

12. Who has the greatest difficulty in making other classmates do what he (she) wants them to do?

    ..............................................

*Questionnaire IV*
*"In the recess"*

A. Whom do you *like* to be with in the recess?

..............................................................................................................
..............................................................................................................
..............................................................................................................
..............................................................................................................

B. Who do you *guess* would like to be with *you* in the recess?

..............................................................................................................
..............................................................................................................
..............................................................................................................
..............................................................................................................

C. Whom are you *usually* with in the recess?

..............................................................................................................
..............................................................................................................
..............................................................................................................
..............................................................................................................

D. Whom *were* you with in the last recess?

..............................................................................................................
..............................................................................................................
..............................................................................................................
..............................................................................................................

## 4. Instructions

### A. *Questionnaire I*

The author personally introduced the investigation in all classrooms. Before the beginning of the lesson, Questionnaire I and an envelope was placed on each of the pupil's tables. Before the children began to answer the questions, the following oral instructions were given in Alfa Basic: "To-day we are going to try to answer some questions. It is not an exam. Neither your classmates nor your teacher are allowed to look at what you have written. When you have answered all the questions, you are to put the paper in the envelope. I am the only one who will look at your answers. You see, I should like to know what kind of workmate a boy (a girl) wants to have. — I will read the questions aloud to you and explain how you are to write. — At school you usually work by yourself. But in some schools the pupils work together in small groups." After that, question *A* in the questionnaire was read aloud: "If you had the opportunity to choose three classmates with whom to work in a group, which three would you like to choose?" I continued: "Consider carefully!

Which classmates do you think you could work best with? Write down after figure one the person you would most like to work with, after figure two the one you would most like to work with next, and after figure three the one you would most like to work with after the first two. After each name there is a 'Why?' There you are to explain in as much detail as possible, why you have chosen just that classmate." After that, the rest of the questionnaire was read aloud without any additional commentaries. — For Alfa Additional the instructions were the same with the exclusion of two sentences ("At school you usually work by yourself. But in some schools the pupils work together in small groups."), as in these classes the children had more direct experience of group work. — When the pupils had finished the questionnaire, they were instructed to put it in the envelope, and the next questionnaire was distributed.

### B. *Questionnaire II*

The "next questionnaire" consisted in the *MF* and *AB* Classes of the form with the heading "Guess", dealing with the "perception" of interpersonal preferences. The questions were read aloud and the meaning of question *C* was explained in detail: "Below the heading 'boys' you are to write five boy names: the five boys in the class whom you guess will receive most choices from their classmates in general, that is, those five you guess many want as their workmates. After figure one you write the boy you guess will receive most choices, that is the boy most classmates want to work with. After figure two you write the boy you think will receive next most choices, etc. Below the heading 'girls' you write in the same way five girl names: the five girls in the class whom you guess will receive most choices from their classmates in general, that is, those five you guess many want as their workmates. After figure one you write the girl you guess will receive most choices; after figure two the one you guess will receive next most, etc. Note that all of you are to write the names of *both* boys and girls!"

### C. *Questionnaire III*

As soon as the pupils had finished Questionnaire II, Questionnaire III was distributed.[5]

---

[5] In the *M* Classes and the *F* Classes, where Questionnaire II was not used, this questionnaire (here given number III) of course came directly after the main sociopreferential questionnaire (I).

I read question *A* aloud ("You have now chosen three co-workers. Here you may write the names of your three best friends in the class"), then I added: "Perhaps you have already written one, two, or all three as your co-workers. Perhaps you have not written any of your best friends as your co-workers. It is just as good whatever you have done: write the names of your three best friends here!" — The pupils were then given the opportunity to answer that question immediately.

Then I read question *B*. ("Write after each question the name of someone in the class whom you think the question applies to especially well!") Then I added: "If there is no such classmate, you do not of course write anything after that question. You may of course also write the same name several times, if you think that the same person is the most suitable in several questions. But write only one name as the answer to each question." I read the questions aloud, and the pupils were instructed to answer one at a time.

### D. *Questionnaire IV*

Questionnaire IV ("In the recess") was used only in the *AB* Classes. The questions were read aloud, and I merely stressed that the pupils could write as many or as few names as they wanted to.

## III. ADDITIONAL TEST-SITUATIONS FOR COMPARATIVE PURPOSES

For specific purposes other types of questionnaires were used in a smaller number of classes. These questionnaires were designed partly to investigate the importance of slight changes of phrasing in the ordinary simple choice method, and partly to compare a series of different preference methods (simple choice, pair comparisons, rank order and different types of rating scales). We find it appropriate, for systematic reasons, to mention these additional test-situations in this chapter. Nevertheless, for the reader's convenience, the more detailed description of them will be postponed to the subsequent analysis of the problem areas which they were designed to clarify (chap. 5: II: 4 and chap. 6: I: 1; cf. also Table 4.2).

## IV. THE REACTIONS OF THE SUBJECTS TO THE TEST-SITUATIONS

The pupils usually reacted positively to the investigations, as soon as they were informed that it was no kind of examination. Most pupils were eager to write down their choices; others thought the whole thing over for a minute or two, sometimes looking round the classroom to examine the choice area until they suddenly found what they were looking for. In a few classes (older boys), a certain unwillingness to give negative choice reports was observed. However, on the whole, the pupils showed astonishingly few signs of doubt even in front of such "difficult" questions as II: *C* and III: *B*.

All the questionnaires in the main test-situation were as a rule completed in one lesson (45 minutes); in the lower classes more time was sometimes required.

## CHAPTER 5

# GENERAL CHARACTERISTICS OF THE SOCIOPREFERENTIAL VARIABLES

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## I. TYPE OF PRIMARY TABULATION IN SOCIOMATRICES

In order to get a primary survey of the choice distribution, the preferential data were tabulated on sociomatrices. As the choice area was limited to the school class, closed tabulations were easily obtained.

Table 5.1. Sociomatrix Illustrating Workmate Choices in Class 3a

| | CA | CB | CC | CD | CE | CF | CG | DA | DB | DC | DD | DE | DF | DG | EA | EB | EC | ED | EE | EF | EG | EH | FA | FB | FC | FD | FE | FF | FG | FH | FI | p | n |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CA | | | | | [++ ++] | (++) | (+ ++) | – | | (+) | | – | | | | | | | | | | | | | | | | | | | | 10 | 2 |
| CB | | | [++] | ++ ++ | | | | + ++ | | | | | | | | | | | | | | | | | | | | | | | | 9 | 0 |
| CC | ++ ++ | [++] | | | (+ ++) | | | | | | | | )–( | | | | | | | | | | | | | | | | | | | 9 | 1 |
| CD | + | | + ++ | | | ++ | (++ ++) | (+) | | | | | | | | | | | | | | | | | | | | | | | | 11 | 0 |
| CE | [++ ++] | | (++) | | | | | | + ++ | (+) | | | | – | | | | | | | | | | | | | | | | | | 10 | 1 |
| CF | (+ ++) | ++ ++ | | | | | [+] | | | | | (++) | | | | | | | | | | | | | | | | | | | | 10 | 0 |
| CG | (+) | + | ++ ++ | (+ ++) | + | [+] | | )–( | – | [++] | | – | – | + | | | | | | | | | | | | | | | | | | 14 | 4 |
| DA | | | | (++ ++) | | | )+ ++( | | (+) | )++( | | | – | | | | | | | | | | | | | | | | | | | 10 | 1 |
| DB | ++ | | | | | | | (+ ++) | | | [++ ++] | | | | | | | | | | | | | | | | | | | | | 9 | 0 |
| DC | (+ ++) | – | | – | (++ ++) | + | [++] | )–( | | | | – | | | | | | | | | | | | | | | | | | | | 10 | 4 |
| DD | ++ | | | | | | | + ++ | [++ ++] | | | | | | | | | | | | | | | | | | | | | | | 9 | 0 |
| DE | | + ++ | | | | (++ ++) | | | | | | | (++) | | + | | | | | | | | | | | | | | | | | 10 | 0 |
| DF | | ++ ++ | )++( | | | + ++ | | | | | | (+) | | | | | | | | | | | | | | | | | | | | 10 | 0 |
| DG | | ++ ++ | | + ++ | | | | | | | | | – | | – | | | | | ++ | | | | | | | | | | | – | 9 | 3 |
| EA | + | | + | | + | | | | | + | | | | | | [++] | )++ ++( | (+ ++) | | | | | | | | | | | | | – | 13 | 1 |
| EB | | | | | | | | | | | | | | | [++] | | (+ ++) | [++ ++] | + | (+) | + | + | [+] | [+] | | | | | | | | 15 | 0 |
| EC | | | | | | | | | | | | | | | )–( | (++ ++) | | [+ ++] | | (++) | | | [+] | )–( | – | – | | )–( | [+] | – | )–( | 11 | 7 |
| ED | | | | | | | | | | | | | | | (++) | [++ ++] | [+ ++] | | (+) | + | + | + | (+) | (+) | | + | | | (+) | – | )–( | 17 | 2 |
| EE | | | | | | | | | | | | | | | ++ ++ | | | (++) | | | | [+ ++] | | | | | | | | | | 9 | 0 |
| EF | | | | | | | | | | | | | | | | (++) | (++ ++) | | | | | | | | | | | | (+ ++) | | | 9 | 0 |
| EG | | + | | – | | | | | | | | – | | | ++ ++ | | | | ++ | | | [–] | [+] | | | (+ ++) | | | | | | 11 | 3 |
| EH | | | | | | | | | | | | | | | ++ ++ | | ++ | | [+ ++] | | [–] | | | | | | (+) | + | | | | 11 | 1 |
| FA | | | | | | | | | | | | | | | + | [+] | [+] | (++) | – | + | [+] | + | | (++ ++) | [+ ++] | | | – | | – | – | 15 | 4 |
| FB | | | | | | | | | | | | | | | + | [+] | )+( | (++) | | + | + | | (+ ++) | | [++ ++] | | – | – | | – | – | 14 | 4 |
| FC | | | | | | | | | | | | | | | ++ | + | | + | | + | | | [+ ++] | [++ ++] | | | – | – | | – | | 12 | 3 |
| FD | | | | | | | | | | | | | | | + | + | | | ++ | | (++ ++) | + | | | | | [–] | – | | – | [+ ++] | 12 | 3 |
| FE | | | | | | | | | | | | | | | | | | | + | | | (++) | | | | [–] | | [++ ++] | | (+ ++) | – | 10 | 2 |
| FF | | | | | | | | | | | | | | | ++ | | )+ ++( | | | | | | | | | | [++ ++] | | – | | | 9 | 1 |
| FG | | | | | | | | | | | | | | | + | + ++ | [+] | (++) | | (++ ++) | | | + | – | – | | | | | | – | 12 | 3 |
| FH | | | | | | | | | | | | | | | + | + ++ | | | ++ ++ | | + | + | | | | | (++) | + | | | | 13 | 0 |
| FI | | | | | | | | | | | | | | | | + | )+( | )+( | + | | ++ ++ | ++ | | | | [+ ++] | | | | | | 13 | 0 |
| $\bar{p}$ | 21 | 19 | 14 | 14 | 13 | 13 | 13 | 10 | 8 | 7 | 4 | 3 | 2 | 1 | 26 | 23 | 23 | 20 | 15 | 13 | 13 | 12 | 11 | 10 | 7 | 7 | 7 | 6 | 5 | 3 | 3 | 346 | |
| $\bar{n}$ | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 3 | 1 | 0 | 1 | 3 | 4 | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 2 | 2 | 2 | 3 | 5 | 1 | 6 | 8 | | 50 |
| $\bar{\bar{p}}$ | 4 | 1 | 2 | 2 | 3 | 3 | 4 | 2 | 2 | 3 | 1 | 2 | 1 | 0 | 2 | 6 | 5 | 7 | 2 | 3 | 2 | 2 | 6 | 4 | 2 | 2 | 3 | 1 | 3 | 1 | 1 | | |
| $\bar{\bar{n}}$ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | | |

Table 5.1 exemplifies such a sociomatrix illustrating workmate choices in class 3a. As is usual, the pupils are listed down the side as choosers and across the top as chosen, in both cases in the same order; outgoing choices are then tabulated in the horizontal arrays, incoming choices in the vertical arrays. However, several characteristics distinguish our kind of sociomatrix from the most common types:

(1) *Plus signs as a near-pictorial presentation of choice intensity.* The first positive workmate choice (Questionnaire I, question *A*: 1) is

symbolized in the sociomatrix by four plus signs $\begin{pmatrix} + & + \\ + & + \end{pmatrix}$, the second with three $\begin{pmatrix} & + & \\ + & & + \end{pmatrix}$, the third with two $(++)$, and all the others (given as answers to question $C$ in the questionnaire) with one $(+)$. By this device the concentration of highly intensive choice reactions in certain arrays becomes more conspicuous.

(2) *Systematic rearrangement of rows and columns.* In order to increase surveyability and information value, the order of the first list of pupils (following, for instance, alphabetical rules) may, as mentioned above, be rearranged according to some sociopreferential characteristic. In the present case we utilized the number of positive choices received $(\overline{p})$ as our main principle for rearrangement. In the mixed classes — like the one illustrated in Table 5.1 — the boys are presented first and the girls second, after which the boy receiving most positive choices is placed first, the boy receiving next most positive choices is placed second, etc.[1] By this device the matrix is not only given added surveyability; in addition, certain kinds of inter-variable comparisons may be made directly from the table.

(3) *Code-names giving information about relative sociometric choice status and sex.* The individuals are given two-letter combinations as code-names, and these combinations give direct information about the relative sociometric choice status in the class. In the non-mixed classes the pupils with high status scores are given $A$ as their first letter, and pupils with low status scores $B$ as their first letter (the division being made so that the same number of pupils fall in the two categories).[2] In the mixed classes $C$ or $D$ are used for boys ($C$ for high status, $D$ for low status)

---

[1] In cases where two or several individuals receive the same number of positive choices, the order in the sociomatrix is determined here by the number of leader choices received (usually represented by $L$, but not included in Table 5.1 in order to increase the surveyability of our illustration) and the number of negative choices received (represented by — in the matrix) according to the following explicit principles: (a) Each $L$ is given the value of $+1$, each — the value of $-1$, whereby the individual receiving the most positive additional score is placed first. (b) If two individuals obtain the same additional score without having received the same number of $L$'s and the same number of —, the following two sub-principles are applied: — is given added negative weight, if one of the individuals lack —; and $L$ is given added positive weight, if both individuals have —. (c) If two individuals have identical values in all three variables mentioned, alphabetical order (according to surname) is applied.

[2] When the class has an odd number of pupils, the division is made so that the "low" category gets one more individual than the "high".

and *E* or *F* for girls (*E* for high status, *F* for low status). As the second letter of the combination, *A* is used for the individual with the highest status value within each category, *B* for the one with the next highest, etc. By this device we can refer to different individuals easily and at the same time *describe* them as to choice status and sex. For example, *CA* is the most chosen boy and *EB* the next most chosen girl in a mixed class.

(4) *Bracket system for two-way relations.* In order to discover whether a choice is reciprocated, we have to compare a pupil's row (choices made) with his column (choices received). As, however, it is then difficult to get a survey of reciprocations and it is even sometimes difficult to detect them in the ordinary sociomatrix, two-way relations are denoted here by a specific bracket system. Thus, square brackets — [+] — are used for such positive choices as have been given a level-identical reciprocation, such as $xP_1P_1y$, $xP_2P_2y$, etc., whilst ordinary round brackets — (+) — are used for other positive reciprocations, such as $xP_1P_2y$. Positive choices which have been given a negative rejoinder ($xPNy$) or negative choices which have been given a positive rejoinder ($xNPy$) are denoted by reversed brackets — )+(, whilst, finally, rejections which have been reciprocated with a negative choice ($xNNy$), are marked in the same way as level-identical positive reciprocations.

In Table 5.1 the totals at the end of each row show for each individual the number of positive choices made ($p$) and the number of negative choices made ($n$), while column totals show the number of positive choices received ($\bar{p}$), and the number of negative choices received ($\bar{n}$). Two-way relations may be read from both columns and rows: the number of positive choices positively reciprocated ($\bar{\bar{p}}$) and the number of negative choices negatively reciprocated ($\bar{\bar{n}}$). Many more array totals are possible: the number of level-identical reciprocations, the number of positive choices given a negative rejoinder, etc., but in order not to overload the illustrating sociomatrix, only the most basic relational summaries are included.

## II. THE SIX BASIC SOCIOPREFERENTIAL VARIABLES

The six basic sociopreferential variables, which can all be obtained by simple addition in the rows and columns of the sociomatrix (positive choices made, positive choices received, positive choices reciprocated; negative choices made, negative choices received, negative choices reciprocated) will be discussed briefly, and the various choice distributions will be illustrated by a series of tables. A comparison between the different

Table 5.2. The Distribution of Choices:
Totals for the Basic Sociopreferential Variables

| Var. | Number of pupils | Number of choices |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Total | $M$ | $S.D.$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |  |  |  |
| $p$ | 861 |  | 3 | 3 | 115 | 133 | 176 | 182 | 125 | 67 | 39 | 11 | 4 | 1 | 1 | 0 | 0 | 1 |  |  |  |  |  |  |  |  | 4815 | 5.59 | 1.84 |
| $\bar{p}$ | 867 | 26 | 84 | 107 | 96 | 96 | 86 | 78 | 59 | 56 | 49 | 30 | 26 | 21 | 16 | 12 | 7 | 4 | 6 | 4 | 0 | 1 | 1 | 0 | 1 | 1 | 4815 | 5.55 | 3.83 |
| $\bar{\bar{p}}$ | 861 | 68 | 174 | 186 | 175 | 119 | 76 | 40 | 11 | 8 | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 2346 | 2.72 | 1.79 |
| $n$ | 861 | 334 | 163 | 166 | 102 | 55 | 28 | 6 | 5 | 1 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1249 | 1.45 | 1.57 |
| $\bar{n}$ | 867 | 402 | 205 | 95 | 61 | 38 | 17 | 11 | 7 | 7 | 11 | 3 | 1 | 2 | 3 | 3 | 0 | 0 | 0 | 1 |  |  |  |  |  |  | 1249 | 1.44 | 2.30 |
| $\bar{\bar{n}}$ | 861 | 764 | 79 | 12 | 3 | 3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 124 | 0.14 | 0.46 |

Table 5.3. The Frequency of "High" (above $M + 1\ S.D.$) Individuals on the Basic Sociopreferential Variables

| Classes | $p$ | | $\bar{p}$ | | $\bar{\bar{p}}$ | | $n$ | | $\bar{n}$ | | $\bar{\bar{n}}$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $N$ | % | $N$ | % | $N$ | % | $N$ | % | $N$ | % | $N$ | % |
| *M* | 30 | 19.6 | 21 | 13.5 | 26 | 17.0 | 24 | 15.7 | 12 | 7.7 | 7 | 4.6 |
| *F* | 32 | 20.0 | 23 | 14.0 | 31 | 19.4 | 23 | 14.4 | 23 | 14.0 | 11 | 6.9 |
| *MF* | 35 | 17.9 | 28 | 14.4 | 35 | 17.9 | 40 | 20.5 | 28 | 14.4 | 30 | 15.4 |
| *AB* | 58 | 16.4 | 58 | 16.4 | 65 | 18.4 | 62 | 17.6 | 48 | 13.6 | 36 | 10.2 |
| Total | 155 | 18.0 | 130 | 15.0 | 157 | 18.2 | 149 | 17.3 | 111 | 12.8 | 84 | 9.8 |

Table 5.4. The Frequency of "Low" (below $M - 1\ S.D.$) Individuals on the Basic Sociopreferential Variables

| Classes | $p$ | | $\bar{p}$ | | $\bar{\bar{p}}$ | | $n$ | | $\bar{n}$ | | $\bar{\bar{n}}$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $N$ | % | $N$ | % | $N$ | % | $N$ | % | $N$ | % | $N$ | % |
| *M* | 31 | 20.3 | 10 | 6.5 | 26 | 17.0 | 24 | 15.7 | 0 | 0 | 0 | 0 |
| *F* | 31 | 19.4 | 18 | 11.0 | 32 | 20.0 | 18 | 11.3 | 0 | 0 | 0 | 0 |
| *MF* | 19 | 10.3 | 18 | 9.2 | 33 | 16.9 | 30 | 15.4 | 0 | 0 | 0 | 0 |
| *AB* | 56 | 15.9 | 52 | 14.7 | 70 | 19.8 | 39 | 11.0 | 8 | 2.3 | 0 | 0 |
| Total | 137 | 15.9 | 98 | 11.3 | 161 | 18.7 | 111 | 12.9 | 8 | 0.9 | 0 | 0 |

variables is facilitated by Table 5.2, which presents total distrib s, and by Tables 5.3 and 5.4, which show the number of individuals h ng especially high (above $M+1\ S.D.$) and especially low (below $M - 1\ S$ .) values in each variable.

## 1. Positive Choices Made ($p$)

Tables 5.5 and 5.6 give a survey of outgoing positive choices in the various classes. On an average 5.59 choices have been made, with 85 % of the individuals grouped in the area covered by 3—7 choices (the range was 1—16). The total distribution is approximately normal with the exception of the fairly abrupt increase from 2 choices to 3, caused by the "floor limit" formulation. The averages of the single classes vary from a lowest value of 4.57 to a highest of 6.91. As a rule, the classes of girls only show a somewhat greater outgoing choice volume ("expansivity") than the classes of boys only (*M* of the girls 6.26 as against *M* of the boys 5.54;

Table 5.5. The Distribution of Positive Choices Made ($p$)
($M$, $F$, and $MF$ Classes)

| Class | Number of pupils | Number of positive choices made | | | | | | | | | | | | Total | *M* | *S. D.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | | | |
| 3m | 26 | | | 2 | 6 | 1 | 4 | 4 | 4 | 3 | 2 | | | 140 | 5.38 | 2.17 |
| 4m | 34 | | | | 2 | 6 | 8 | 9 | 2 | 3 | 4 | | | 198 | 5.82 | 1.73 |
| 5m | 23 | | | | 7 | 3 | 0 | 7 | 5 | 1 | | | | 118 | 5.13 | 1.74 |
| 6m | 25 | | | | 7 | 1 | 4 | 10 | 2 | 1 | | | | 127 | 5.08 | 1.53 |
| 7m | 26 | | | | 3 | 1 | 6 | 7 | 3 | 4 | 2 | | | 156 | 6.00 | 1.72 |
| 8m | 19 | | | | 2 | 2 | 6 | 4 | 2 | 2 | 0 | 1 | | 108 | 5.68 | 1.77 |
| *M* | 153 | | | 2 | 27 | 14 | 28 | 41 | 18 | 14 | 8 | 1 | | 847 | 5.54 | 1.79 |
| 3f | 29 | | | 1 | 3 | 7 | 3 | 9 | 5 | 0 | 1 | | | 152 | 5.24 | 1.60 |
| 4f | 35 | | | | 3 | 1 | 4 | 3 | 9 | 8 | 6 | 1 | | 242 | 6.91 | 1.85 |
| 5f | 23 | | | | 1 | 3 | 5 | 6 | 4 | 4 | | | | 136 | 5.91 | 1.44 |
| 6f | 25 | | | | 2 | 1 | 2 | 8 | 5 | 2 | 3 | 2 | | 166 | 6.64 | 1.89 |
| 7f | 25 | | | | | | 8 | 5 | 7 | 4 | 1 | | | 160 | 6.40 | 1.22 |
| 8f | 23 | | | | 1 | 2 | 3 | 6 | 6 | 4 | 1 | | | 145 | 6.30 | 1.49 |
| *F* | 160 | | | 1 | 10 | 14 | 25 | 37 | 36 | 22 | 12 | 3 | | 1001 | 6.26 | 1.69 |
| | 38 | | | | 5 | 8 | 9 | 3 | 7 | 2 | 1 | 2 | 1 | 215 | 5.66 | 2.10 |
| | 34 | | | | 2 | 1 | 6 | 9 | 7 | 4 | 3 | 1 | 1 | 223 | 6.56 | 1.81 |
| | 32 | | | | 3 | 6 | 7 | 6 | 2 | 4 | 4 | | | 186 | 5.81 | 1.89 |
| | 37 | | | | | 1 | 4 | 11 | 11 | 8 | 2 | | | 249 | 6.73 | 1.17 |
| | 30 | | | | 2 | 7 | 6 | 9 | 3 | 0 | 2 | 1 | | 167 | 5.57 | 1.69 |
| | 24 | | | | 2 | 7 | 5 | 7 | 0 | 2 | 1 | | | 126 | 5.25 | 1.54 |
| | 195 | | | | 14 | 30 | 37 | 45 | 30 | 20 | 13 | 4 | 2 | 1166 | 5.98 | 1.79 |

the difference being clearly significant: $P < .01$).[3] The individuals with $p$-values above $M + 1\ S.D.$ ("positively super-selecting"; "super-$p$") comprise 18 %; the corresponding low category ("positively sub-selecting"; "sub-$p$") comprises 15.9 %. These proportions, then, correspond approximately to what we expect in a normal distribution (viz. about 16 %).

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[3] In the present report we use $P$ (together with a number giving level of significance) to denote a probability value estimated by chi-square calculation (with correction for continuity), whereas $P_t$ is employed for a probability value estimated by $t$ analysis. As a rule, we use "significant" for $P$-values below the .05 level, "clearly significant" for $P$-values below the .01 level, and "highly significant" for $P$-values below the .001 level. — In the specific case above, a four-field table based on a median cut was used for a rough estimation of $P$.

Table 5.6. The Distribution of Positive Choices Made ($p$)
(*AB* Classes)

| Class | Number of pupils | Number of positive choices made | | | | | | | | | | | | | | | | | Total | *M* | *S. D.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | | |
| 3a | 31 | | | | 8 | 8 | 4 | 3 | 3 | 2 | 2 | 0 | 1 | | | | | | 160 | 5.16 | 2.16 |
| 4a | 31 | | | | 3 | 4 | 7 | 6 | 4 | 2 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 201 | 6.48 | 3.02 |
| 5a | 31 | | | | 3 | 8 | 12 | 3 | 3 | 1 | 0 | 1 | | | | | | | 158 | 5.10 | 1.51 |
| 6a | 27 | | | | 3 | 7 | 9 | 4 | 4 | | | | | | | | | | 134 | 4.96 | 1.22 |
| 7a | 30 | | | | 9 | 7 | 6 | 6 | 0 | 2 | | | | | | | | | 137 | 4.57 | 1.46 |
| 8a | 30 | | 2 | 0 | 3 | 8 | 7 | 5 | 4 | 1 | | | | | | | | | 144 | 4.80 | 1.67 |
| 3b | 28 | | | | 5 | 4 | 6 | 10 | 2 | 1 | | | | | | | | | 143 | 5.11 | 1.37 |
| 4b | 32 | | | | 4 | 11 | 7 | 5 | 5 | | | | | | | | | | 156 | 4.88 | 1.29 |
| 5b | 32 | | | | 3 | 9 | 7 | 4 | 4 | 2 | 2 | 1 | | | | | | | 176 | 5.50 | 1.87 |
| 6b | 31 | | | | 9 | 2 | 12 | 6 | 2 | | | | | | | | | | 145 | 4.68 | 1.28 |
| 7b | 29 | | | | 8 | 7 | 5 | 3 | 4 | 0 | 1 | 1 | | | | | | | 142 | 4.90 | 1.88 |
| 8b | 21 | | 1 | 0 | 6 | 0 | 4 | 4 | 6 | | | | | | | | | | 105 | 5.00 | 1.84 |
| *AB* | 353 | | 3 | 0 | 64 | 75 | 86 | 59 | 41 | 11 | 6 | 3 | 2 | 1 | 1 | 0 | 0 | 1 | 1801 | 5.10 | 1.83 |

## 2. Positive Choices Received ($\bar{p}$)

### A. *General tendencies*

Tables 5.7 and 5.8 give a survey of incoming positive choices. We find that positive choices received show considerably greater standard deviation than positive choices made ($S.D._{\bar{p}} = 3.83$ as against $S.D._{p} = 1.84$) and that, as to variation, the present variable is fairly unique among the basic ones. It is therefore not surprising that this variable has been given the greatest attention within preferential sociometry: here we find the most clear and moreover often the most easily interpretable differences. The distribution is fairly positively skewed as has usually been the case in earlier investigations of a similar character. The individuals with $\bar{p}$-values above $M + 1\ S.D.$ ("positively super-selected"; "super-$\bar{p}$") make up 15 %; the corresponding low category ("positively sub-selected"; "sub-$\bar{p}$") makes up 11.3 %.

### B. *Specific problems: "Isolation" and the "sociodynamic effect"*

When we wish to utilize the choices for the construction of groups, e. g., work groups in the school class, a specific problem is encountered in those individuals who do not receive any positive choices at all.

Table 5.7. he Distribution of Positive Choices Received ($\overline{p}$)
($M, F$, and $MF$ Classes)

| Class | Number of pupils | Number of positive choices received | | | | | | | | | | | | | | | | | | | | | | | | | Total | $M$ | $S.D.$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | | | |
| 3m | 27 | 1 | 0 | 4 | 4 | 4 | 4 | 5 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | | | | | | | | | | 140 | 5.19 | 3.31 |
| 4m | 34 | 1 | 4 | 3 | 6 | 2 | 3 | 5 | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | | 198 | 5.82 | 4.81 |
| 5m | 23 | 1 | 1 | 2 | 2 | 5 | 3 | 3 | 2 | 0 | 3 | 0 | 0 | 0 | 1 | | | | | | | | | | | | 118 | 5.13 | 2.97 |
| 6m | 26 | 2 | 1 | 2 | 1 | 8 | 2 | 4 | 3 | 0 | 1 | 0 | 1 | 1 | | | | | | | | | | | | | 127 | 4.88 | 2.92 |
| 7m | 26 | | 4 | 5 | 3 | 1 | 1 | 2 | 0 | 0 | 3 | 3 | 1 | 0 | 1 | 0 | 1 | 1 | | | | | | | | | 156 | 6.00 | 4.66 |
| 8m | 19 | 1 | 4 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 1 | | | | | | | | | | 108 | 5.68 | 4.77 |
| *M* | 155 | 6 | 14 | 18 | 17 | 21 | 15 | 20 | 7 | 3 | 11 | 5 | 3 | 4 | 4 | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | | 847 | 5.46 | 3.98 |
| 3f | 30 | 3 | 5 | 4 | 2 | 1 | 1 | 3 | 3 | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | | | | | | | | 152 | 5.07 | 4.41 |
| 4f | 35 | | 1 | 6 | 3 | 6 | 2 | 3 | 1 | 5 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 242 | 6.91 | 5.55 |
| 5f | 26 | 1 | 4 | 5 | 3 | 2 | 1 | 0 | 1 | 2 | 1 | 3 | 1 | 0 | 1 | 1 | | | | | | | | | | | 136 | 5.23 | 4.20 |
| 6f | 25 | | 1 | 5 | 2 | 2 | 1 | 3 | 3 | 1 | 0 | 1 | 2 | 1 | 1 | 0 | 1 | 0 | 1 | | | | | | | | 166 | 6.64 | 4.48 |
| 7f | 25 | | 4 | 2 | 2 | 3 | 2 | 4 | 0 | 1 | 2 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | | | | 160 | 6.40 | 5.23 |
| 8f | 23 | | 1 | 4 | 0 | 3 | 4 | 1 | 1 | 2 | 2 | 1 | 1 | 3 | | | | | | | | | | | | | 145 | 6.30 | 3.56 |
| *F* | 164 | 4 | 16 | 26 | 12 | 17 | 11 | 14 | 9 | 14 | 9 | 8 | 5 | 4 | 2 | 3 | 1 | 1 | 3 | 2 | 0 | 1 | 1 | 0 | 0 | 1 | 1001 | 6.10 | 4.67 |
| 3mf | 38 | 1 | 8 | 1 | 8 | 2 | 4 | 1 | 2 | 2 | 1 | 0 | 3 | 1 | 0 | 0 | 2 | 1 | 1 | | | | | | | | 215 | 5.66 | 4.78 |
| 4mf | 34 | 1 | 3 | 4 | 3 | 3 | 2 | 2 | 1 | 4 | 3 | 0 | 4 | 1 | 1 | 0 | 0 | 0 | 2 | | | | | | | | 223 | 6.56 | 4.53 |
| 5mf | 32 | 2 | 2 | 4 | 2 | 3 | 4 | 2 | 2 | 3 | 3 | 2 | 0 | 0 | 1 | 2 | | | | | | | | | | | 186 | 5.81 | 3.89 |
| 6mf | 37 | 1 | 1 | 2 | 4 | 4 | 4 | 6 | 3 | 1 | 3 | 1 | 1 | 2 | 1 | 2 | 0 | 0 | 0 | 1 | | | | | | | 249 | 6.73 | 4.07 |
| 7mf | 30 | 2 | 4 | 5 | 3 | 1 | 0 | 1 | 2 | 3 | 1 | 4 | 2 | 1 | 1 | | | | | | | | | | | | 167 | 5.57 | 4.15 |
| 8mf | 24 | | 1 | 4 | 1 | 2 | 3 | 7 | 2 | 3 | 0 | 0 | 1 | | | | | | | | | | | | | | 126 | 5.25 | 2.42 |
| *MF* | 195 | 7 | 19 | 20 | 21 | 15 | 17 | 19 | 12 | 16 | 11 | 7 | 11 | 5 | 4 | 4 | 2 | 1 | 3 | 1 | | | | | | | 1166 | 5.98 | 4.11 |

Table 5.8. The Distribution of Positive Choices Received ($\overline{p}$)
(*AB* Classes)

| Class | Number of pupils | Number of positive choices received | | | | | | | | | | | | | | | | | | | Total | *M* | *S.D.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | | | |
| 3a | 31 | | 5 | 2 | 5 | 3 | 3 | 2 | 3 | 3 | 2 | 1 | 1 | 0 | 1 | | | | | | 160 | 5.16 | 3.26 |
| 4a | 31 | | 3 | 4 | 2 | 3 | 1 | 1 | 4 | 4 | 1 | 3 | 3 | 0 | 0 | 1 | 1 | | | | 201 | 6.48 | 3.91 |
| 5a | 31 | 3 | 2 | 5 | 4 | 3 | 3 | 1 | 1 | 2 | 2 | 1 | 0 | 2 | 2 | | | | | | 158 | 5.10 | 3.99 |
| 6a | 27 | | 1 | 4 | 5 | 4 | 3 | 4 | 1 | 1 | 2 | 1 | 0 | 1 | | | | | | | 134 | 4.96 | 2.77 |
| 7a | 30 | | 2 | 3 | 6 | 4 | 6 | 3 | 2 | 3 | 1 | | | | | | | | | | 137 | 4.57 | 2.16 |
| 8a | 30 | | 4 | 7 | 1 | 4 | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 144 | 4.80 | 3.98 |
| 3b | 28 | | 3 | 4 | 1 | 5 | 4 | 3 | 3 | 2 | 1 | 0 | 0 | 1 | 1 | | | | | | 143 | 5.11 | 3.07 |
| 4b | 32 | 2 | 6 | 2 | 6 | 3 | 1 | 2 | 3 | 1 | 2 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | | | 156 | 4.88 | 4.08 |
| 5b | 32 | 2 | 2 | 3 | 6 | 3 | 1 | 3 | 1 | 2 | 5 | 1 | 1 | 1 | 0 | 1 | | | | | 176 | 5.50 | 3.70 |
| 6b | 31 | 2 | 2 | 3 | 4 | 5 | 5 | 2 | 3 | 2 | 0 | 2 | 1 | | | | | | | | 145 | 4.68 | 2.86 |
| 7b | 29 | | 2 | 5 | 5 | 3 | 5 | 1 | 3 | 1 | 1 | 1 | 0 | 2 | | | | | | | 142 | 4.90 | 3.05 |
| 8b | 21 | | 3 | 1 | 1 | 3 | 5 | 0 | 5 | 2 | 1 | | | | | | | | | | 105 | 5.00 | 2.43 |
| *AB* | 353 | 9 | 35 | 43 | 46 | 43 | 43 | 25 | 31 | 23 | 18 | 10 | 7 | 8 | 6 | 3 | 1 | 1 | 0 | 1 | 1801 | 5.10 | 3.35 |

### a. *Data survey*

Tables 5.9—5.11 are designed to give information both about the number of "positively non-selected" individuals in the different classes (the columns headed "1st-last choice") and about the number of individuals who are excluded from positive choices on the highest preference levels. In the total population of 867 individuals 42 % remain unchosen after the first choice, 23 % after the second choice, 12 % after the third choice, and only 3 % after the last choice.

### b. *Discussion*

Moreno, from the very beginning, was interested in the children who did not receive any positive choices at all, the so-called "isolated" individuals.[4] In a school class investigation (1934, p. 25 et seq.) he found

[4] The term "isolated" may be said to belong to the category of terms characterized above as everyday expressions given a technical definition, and it shares the common deficiencies of this type of verbal condensation. That is, even if the word is employed and defined operationally in terms of choice behavior (i. e., used for those who have not received any positive choices in a specific sociopreferential situation), sometimes the investigator himself or his readers have had a tendency to conclude without further investigation, that the unchosen is also emotionally isolated, maladjusted, unhappy, etc.

Table 5.9. Number and Percentage of Unchosen at Different Preference Levels ($M$, $F$, and $MF$ Classes)

| Class | Total | 1st choice | | 1st–2nd choice | | 1st–3rd choice | | 1st–last choice | |
|---|---|---|---|---|---|---|---|---|---|
| | | *N* | % | *N* | % | *N* | % | *N* | % |
| 3m | 27 | 15 | 56 | 5 | 19 | 2 | 7 | 1 | 4 |
| 4m | 34 | 17 | 50 | 9 | 26 | 3 | 9 | 1 | 3 |
| 5m | 23 | 10 | 43 | 4 | 17 | 2 | 9 | 1 | 4 |
| 6m | 26 | 13 | 50 | 6 | 23 | 4 | 15 | 2 | 8 |
| 7m | 26 | 11 | 42 | 7 | 27 | 3 | 12 | 0 | |
| 8m | 19 | 10 | 53 | 6 | 32 | 5 | 26 | 1 | 5 |
| 3m—8m | 155 | 76 | 49 | 37 | 24 | 19 | 12 | 6 | 4 |
| 3f | 30 | 12 | 40 | 7 | 23 | 6 | 20 | 3 | 10 |
| 4f | 35 | 12 | 34 | 5 | 14 | 3 | 9 | 0 | |
| 5f | 26 | 11 | 42 | 6 | 23 | 3 | 12 | 1 | 4 |
| 6f | 25 | 11 | 44 | 8 | 32 | 3 | 12 | 0 | |
| 7f | 25 | 11 | 44 | 5 | 20 | 3 | 12 | 0 | |
| 8f | 23 | 6 | 26 | 4 | 17 | 2 | 9 | 0 | |
| 3f—8f | 164 | 63 | 38 | 35 | 21 | 20 | 12 | 4 | 2 |
| 3mf | 38 | 23 | 61 | 13 | 34 | 10 | 26 | 1 | 3 |
| 4mf | 34 | 17 | 50 | 12 | 35 | 8 | 24 | 1 | 3 |
| 5mf | 32 | 13 | 41 | 5 | 16 | 3 | 9 | 2 | 6 |
| 6mf | 37 | 21 | 57 | 13 | 35 | 8 | 22 | 1 | 3 |
| 7mf | 30 | 17 | 57 | 12 | 40 | 7 | 23 | 2 | 7 |
| 8mf | 24 | 6 | 25 | 5 | 21 | 3 | 13 | 0 | |
| 3mf—8mf | 195 | 97 | 50 | 60 | 31 | 39 | 20 | 7 | 4 |

15—35 % "isolated", and in his Training School investigation 15 % "isolated" (op. cit., p. 74). In both these investigations MORENO employed

This may be considered probable in certain connections (cf. the investigation of extreme subject categories below), but it is of course far from a self-evident fact. As the term "isolated" because of its "sub-purity" undoubtedly invites the reader to make such too hasty generalizations, we prefer to speak about "positively non-selected" individuals (or the "-$\bar{P}$ plurel"; cf. chap. 3: II: 2: C). A further reason for not using "isolated" without explicit reservations is that this term has also been employed within preferential sociometry for other types of choice constellations, for instance, for "positively non-selected *and* non-selecting" individuals (cf., e. g., MORENO 1953, p. 258, where the terms "unchosen" and "isolated" are used for different choice facts; cf. also MORENO's definition of "isolate", op. cit., p. 720).

Table 5.10. Number and Percentage of Unchosen at Different Preference Levels (*AB* Classes)

| Class | Total | 1st choice |  | 1st–2nd choice |  | 1st–3rd choice |  | 1st–last choice |  |
|---|---|---|---|---|---|---|---|---|---|
|  |  | *N* | % | *N* | % | *N* | % | *N* | % |
| 3a | 31 | 11 | 35 | 4 | 13 | 1 | 3 | 0 |  |
| 4a | 31 | 13 | 42 | 9 | 29 | 5 | 16 | 0 |  |
| 5a | 31 | 13 | 42 | 8 | 26 | 5 | 16 | 3 | 10 |
| 6a | 27 | 10 | 37 | 3 | 11 | 0 |  | 0 |  |
| 7a | 30 | 13 | 43 | 8 | 27 | 2 | 7 | 0 |  |
| 8a | 30 | 8 | 27 | 5 | 17 | 2 | 7 | 0 |  |
| 3b | 28 | 6 | 21 | 1 | 4 | 1 | 4 | 0 |  |
| 4b | 32 | 15 | 47 | 10 | 31 | 7 | 22 | 2 | 6 |
| 5b | 32 | 13 | 41 | 6 | 19 | 4 | 13 | 2 | 6 |
| 6b | 31 | 12 | 39 | 6 | 19 | 2 | 6 | 2 | 6 |
| 7b | 29 | 11 | 38 | 3 | 10 | 1 | 3 | 0 |  |
| 8b | 21 | 5 | 24 | 2 | 10 | 0 |  | 0 |  |
| Total | 353 | 130 | 37 | 65 | 18 | 30 | 8 | 9 | 3 |

Table 5.11. Number and Percentage of Unchosen at Different Preference Levels (Totals)

| Classes | Total | 1st choice |  | 1st–2nd choice |  | 1st–3rd choice |  | 1st–last choice |  |
|---|---|---|---|---|---|---|---|---|---|
|  |  | *N* | % | *N* | % | *N* | % | *N* | % |
| *M* | 155 | 76 | 49 | 37 | 24 | 19 | 12 | 6 | 4 |
| *F* | 164 | 63 | 38 | 35 | 21 | 20 | 12 | 4 | 2 |
| *MF* | 195 | 97 | 50 | 60 | 31 | 39 | 20 | 7 | 4 |
| *AB* | 353 | 130 | 37 | 65 | 18 | 30 | 8 | 9 | 3 |
| Total | 867 | 366 | 42 | 197 | 23 | 108 | 12 | 26 | 3 |

*k*-choice requests ("Pick 2" and "Pick 5"). Would not an investigation with unlimited choice possibilities give another result? MORENO raises the question himself in connection with the Training School data, but his answer is: "a higher rate than 5 choices would have increased the number of choices for those who have been 'stars' under 5 choice conditions and would have continued to leave stubbornly out the unchosen ones. We call this process of persistently leaving out a number of persons of a group the *sociodynamic effect*." (op. cit., p. 75; cf. 1953, p. 226).

At this point MORENO ought perhaps to have expressed himself more cautiously. Our Tables 5.9—5.11 demonstrate with all desirable clarity the impropriety of employing arbitrary *k*-choice requests when we wish to make more absolute statements about "isolation". If our pupils had been requested to make two choices — as in MORENO's school class investigation — 6 or 7 pupils from each class would probably have appeared "isolated" (in all, 197 or 23 % remain unchosen after the two first choices). In fact, after the last choice *no* such pupils remained in 14 of the 30 classes, and in the others only one, two, or — exceptionally — three.[5]

Certainly we can speak about a *sociodynamic effect*, but it must not be formulated so categorically as in the quotation given above. As a sociodynamic effect, we may consider the *tendency* of the choosers to give *most* choices to those already much chosen when the choice possibilities are extended. From the point of view of total structure the 15 % girls who were described as "isolated" in MORENO's investigation, would of course have been *relatively* "isolated", even if more choices had been allowed — but the *absolute* number may be markedly changed, a fact which is clear from the present results. Even if these changes may be overlooked when we wish to investigate certain general trends in group structure, they are of utmost importance, when we wish to find out ways for the best possible readjustment for socially maladjusted children.

When discussing the number of positively non-selected individuals in different groups, we have hitherto been most interested in avoiding any confusion between purely methodological causes of variation in their proportional frequency and extra-methodological causes. Can our data give any hints about the latter? A comparison between different *age levels* shows that whilst only four of the fifteen classes on the Swedish grade levels 3—5 lack positively non-selected pupils, such pupils are not found in ten of the fifteen classes on the grade levels 6—8. Similarly, we find that whilst only $^1/_3$ of the classes of Alfa Basic lack individuals who do not receive any positive choices, the corresponding proportion in Alfa Additional is $^2/_3$. It is not impossible that the extended possibilities of contact caused by the *group work* in the school class has contributed to this difference, for Alfa Additional represents classes with more regular group work experience and Alfa Basic classes without more regular group work experience. If we examine the proportion of positively non-selected on the first, first-second, and first-third preference levels, we also perceive that all through, the percentages are lower in the *AB* Classes than in the *M* Classes, *F* Classes, and *MF* Classes. Thus, we find even in the first choices a somewhat lower concentration on single individuals in Alfa Additional (the differences between the *AB* Classes and the *MF* Classes — the mixed classes with and without group work experience — are clearly significant for all the preference levels mentioned: $P < .01$). It seems therefore as if experience of group work may somewhat modify the so-called "sociodynamic effect", that is, produce an equalization of choice concentrations within the class in such a way that what Moreno somewhat drastically calls "the sociometric proletariat" (1951, p. 168) is diminished. We cannot decide definitely whether circumstances other than group work experience (and factors connected with this) may be thought of as causing the differences analyzed above; experimental replications in other settings may be of use for further elucidating this problem.

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[5] We wish to stress our expression "would probably have" when referring to the expected choice distribution in the case of a two-choice request. Of course, this post-experimental manipulation of data can only give us an approximate idea of the result of experimental manipulation in the primary situation (cf. our discussion of the same problem in chap. 6). — A contributing cause — besides the five-choice request — to the relatively high number of unchosen at the Training School for girls may be that the choices were also directed outside the nearest group (outside "the cottage") and that the choice area was therefore rather large (about 500).

### 3. Positive Choices Reciprocated ($\bar{\bar{p}}$)

#### A. *General tendencies*

Hitherto the positive choices have been examined without regard to whether they have been reciprocated or not. For the single individual it may be of decisive importance, however, whether an interaction wish is mutual, met by indifference, or even by rejection. Tables 5.12 and 5.13 give a survey of positive choices reciprocated. The mean for the total population is 2.72; thus, on an average, every second outgoing positive choice is met by an incoming positive choice. The individuals who have not received any positive choice cannot of course receive any reciprocated positive choice. The proportion of individuals who receive a zero $\bar{\bar{p}}$-score is 8 % (as against 3 % with a zero $\bar{p}$-score). We thus find a certain number of individuals who do not totally lack incoming positive choices, but who have not been chosen by any of those they prefer themselves ($\bar{P}$.-$\bar{\bar{P}}$ plurel). These individuals may also be a problem in constructing groups; the existence of this category ought therefore to be clear to the teacher. — The distribution within the $\bar{\bar{p}}$-variable is somewhat positively skewed and the standard deviation is fairly small when we

Table 5.12. The Distribution of Positive Choices Reciprocated ($\bar{p}$)
(*M*, *F*, and *MF* Classes)

| Class | Number of pupils | Number of positive choices reciprocated | | | | | | | | | | | Total | *M* | *S. D.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| 3m | 26 | | 7 | 8 | 3 | 3 | 4 | 1 | | | | | 70 | 2.69 | 1.57 |
| 4m | 34 | 3 | 9 | 4 | 10 | 1 | 3 | 4 | | | | | 90 | 2.65 | 1.84 |
| 5m | 23 | 3 | 3 | 7 | 4 | 4 | 1 | 1 | | | | | 56 | 2.44 | 1.59 |
| 6m | 25 | 2 | 6 | 5 | 5 | 6 | 1 | | | | | | 60 | 2.40 | 1.41 |
| 7m | 26 | 3 | 4 | 8 | 4 | 3 | 1 | 2 | 1 | | | | 68 | 2.62 | 1.88 |
| 8m | 19 | 2 | 4 | 4 | 2 | 2 | 4 | 0 | 0 | 0 | 0 | 1 | 56 | 2.95 | 2.41 |
| *M* | 153 | 13 | 33 | 36 | 28 | 19 | 14 | 8 | 1 | 0 | 0 | 1 | 400 | 2.61 | 1.77 |
| 3f | 29 | 7 | 8 | 3 | 4 | 5 | 2 | | | | | | 56 | 1.93 | 1.67 |
| 4f | 35 | | 9 | 5 | 8 | 7 | 3 | 1 | 2 | | | | 106 | 3.03 | 1.72 |
| 5f | 23 | 5 | 5 | 2 | 6 | 2 | 1 | 2 | | | | | 52 | 2.26 | 1.89 |
| 6f | 25 | 2 | 4 | 6 | 5 | 3 | 3 | 1 | 0 | 1 | | | 72 | 2.88 | 1.92 |
| 7f | 25 | | 6 | 4 | 8 | 3 | 4 | | | | | | 70 | 2.80 | 1.39 |
| 8f | 23 | | 3 | 7 | 4 | 3 | 3 | 3 | | | | | 74 | 3.22 | 1.65 |
| *F* | 160 | 14 | 35 | 27 | 35 | 23 | 16 | 7 | 2 | 1 | | | 430 | 2.69 | 1.75 |
| 3mf | 38 | 5 | 11 | 7 | 9 | 1 | 4 | 0 | 0 | 1 | | | 84 | 2.21 | 1.76 |
| 4mf | 34 | 3 | 5 | 6 | 5 | 4 | 5 | 3 | 1 | 2 | | | 114 | 3.35 | 2.24 |
| 5mf | 32 | 3 | 3 | 8 | 9 | 4 | 2 | 3 | | | | | 90 | 2.81 | 1.66 |
| 6mf | 37 | 2 | 2 | 8 | 9 | 6 | 4 | 2 | 3 | 1 | | | 130 | 3.51 | 1.95 |
| 7mf | 30 | 5 | 5 | 4 | 2 | 8 | 3 | 3 | | | | | 84 | 2.80 | 1.99 |
| 8mf | 24 | | 5 | 4 | 5 | 4 | 4 | 2 | | | | | 76 | 3.17 | 1.63 |
| *MF* | 195 | 18 | 31 | 37 | 39 | 27 | 22 | 13 | 4 | 4 | | | 578 | 2.96 | 1.92 |

compare it with that of the $\bar{p}$-variable. The range is 0—10 with about 75 % of the individuals grouped in the area covered by 1—4. The individuals with $\bar{\bar{p}}$ values above $M + 1\ S.D.$ ("positively super-reciprocated"; "super-$\bar{\bar{p}}$") make up 18.2 %; the corresponding low category ("positively sub-reciprocated"; "sub-$\bar{\bar{p}}$") makes up 18.7 %.

### B. *Specific problems: Positive reciprocity and group "integration"*

If we wish to compare the number of positive choices reciprocated for different classes, we may of course start from the means. It is clear,

Table 5.13. The Distribution of Positive Choices Reciprocated ($\bar{\bar{p}}$)
(*AB* Classes)

| Class | Number of pupils | Number of positive choices reciprocated | | | | | | | | | | | Total | *M* | *S. D.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| 3a | 31 | 1 | 6 | 11 | 6 | 3 | 1 | 2 | 1 | | | | 82 | 2.65 | 1.64 |
| 4a | 31 | 1 | 5 | 5 | 4 | 4 | 5 | 2 | 2 | 0 | 2 | 1 | 122 | 3.94 | 2.59 |
| 5a | 31 | 5 | 5 | 7 | 5 | 4 | 3 | 0 | 1 | 1 | | | 80 | 2.58 | 2.03 |
| 6a | 27 | | 6 | 8 | 5 | 7 | 1 | | | | | | 70 | 2.59 | 1.22 |
| 7a | 30 | 1 | 6 | 9 | 11 | 2 | 1 | | | | | | 70 | 2.33 | 1.10 |
| 8a | 30 | 4 | 7 | 9 | 5 | 2 | 2 | 1 | | | | | 64 | 2.13 | 1.55 |
| 3b | 28 | 1 | 5 | 6 | 8 | 3 | 3 | 1 | 0 | 1 | | | 82 | 2.93 | 1.76 |
| 4b | 32 | 3 | 11 | 5 | 5 | 6 | 2 | | | | | | 70 | 2.19 | 1.49 |
| 5b | 32 | 3 | 5 | 6 | 5 | 7 | 4 | 1 | 0 | 1 | | | 94 | 2.94 | 1.88 |
| 6b | 31 | 2 | 6 | 8 | 11 | 2 | 1 | 1 | | | | | 74 | 2.39 | 1.33 |
| 7b | 29 | | 8 | 9 | 3 | 7 | 1 | 1 | | | | | 74 | 2.55 | 1.40 |
| 8b | 21 | 2 | 5 | 3 | 5 | 3 | 0 | 3 | | | | | 56 | 2.67 | 1.85 |
| *AB* | 353 | 23 | 75 | 86 | 73 | 50 | 24 | 12 | 4 | 3 | 2 | 1 | 938 | 2.66 | 1.74 |

however, that these values are influenced by the number of positive choices made in the class. A comparison more reliably founded may be made starting from an index relating the total number of $\bar{\bar{p}}$ observed in a class to the total number of $\bar{\bar{p}}$ expected in the class, taking into account the number of positive choices made and the number of individuals (in the case of a chance distribution). The "*index of integration*" proposed by CRISWELL (1946, 1947, cf. above chap. 3: IV) employs just these operations and will be used here.[6]

### a. *Data survey*

Tables 5.14 and 5.15 give a survey of the indices and corresponding chi-square calculations.[7] We find that the indices in all classes exceed 1.00,

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[6] It ought to be stressed that our calculations here employ the mean of choices made in the class whenever we make a statement about the probability that an individual will be chosen by a specific individual. This procedure is recommended by CRISWELL in cases where *k*-choice requests are not used. This makes the calculation somewhat less exact (cf. LOOMIS & PEPINSKY 1948), but since choice variations are not very great and no individuals have neglected to make positive choices, the method may be expected to give a satisfactory approximation in our case.

[7] When applying the chi-square test we have to remember that we deal with pairs instead of single choices (cf. CRISWELL 1947, p. 266).

Table 5.14. Index of Structural "Integration"
($M$, $F$, and $MF$ Classes)

| Class | *Ro* | *Uo* | *I* | $\chi^2$ | *P* |
|---|---|---|---|---|---|
| 3m | 70 | 70 | 3.65 | 33.7 | <.001 |
| 4m | 90 | 108 | 3.90 | 34.4 | <.001 |
| 5m | 56 | 62 | 2.97 | 19.3 | <.001 |
| 6m | 60 | 67 | 3.33 | 14.9 | <.001 |
| 7m | 68 | 88 | 2.44 | 16.5 | <.001 |
| 8m | 56 | 52 | 2.33 | 3.8 | <.1 |
| Mean | | | 3.10 | | |
| 3f | 56 | 96 | 2.54 | 16.5 | <.001 |
| 4f | 106 | 136 | 3.06 | 41.4 | <.001 |
| 5f | 52 | 84 | 1.68 | 4.4 | <.05 |
| 6f | 72 | 94 | 2.00 | 10.2 | <.01 |
| 7f | 70 | 90 | 2.14 | 11.9 | <.001 |
| 8f | 74 | 71 | 2.60 | 7.6 | <.01 |
| Mean | | | 2.34 | | |
| 3mf | 84 | 131 | 3.55 | 32.5 | <.001 |
| 4mf | 114 | 109 | 4.21 | 41.0 | <.001 |
| 5mf | 90 | 96 | 4.08 | 33.7 | <.001 |
| 6mf | 130 | 119 | 4.75 | 57.5 | <.001 |
| 7mf | 84 | 83 | 4.26 | 32.0 | <.001 |
| 8mf | 76 | 50 | 5.15 | 27.5 | <.001 |
| Mean | | | 4.33 | | |
| Total mean | | | 3.26 | | |

which thus means that all through, the values observed are larger than the values theoretically expected. We find also, that the deviations in nearly all cases must be characterized as highly significant. The lowest indices are found in the $F$ Classes ($M = 2.34$), the next lowest in the $M$ Classes ($M = 3.10$), whilst the highest values are seen in the $AB$ Classes ($M = 4.96$), and the next highest in the $MF$ Classes ($M = 4.33$). The mixed classes, then, have considerably higher indices than the non-mixed classes ($M = 4.75$ *v.* $M = 2.72$; $P_t < .001$). The mean of the indices in the three lower grade levels is 4.05, in the three higher grade levels 3.83.

Table 5.15. Index of Structural "Integration"
(*AB* Classes)

| Class | $Ro$ | $Uo$ | $I$ | $\chi^2$ | $P$ |
|---|---|---|---|---|---|
| 3a | 82 | 78 | 5.06 | 42.8 | $<.001$ |
| 4a | 122 | 79 | 5.61 | 51.6 | $<.001$ |
| 5a | 80 | 78 | 5.01 | 41.7 | $<.001$ |
| 6a | 70 | 64 | 4.63 | 29.4 | $<.001$ |
| 7a | 70 | 67 | 5.57 | 44.0 | $<.001$ |
| 8a | 64 | 80 | 4.02 | 27.0 | $<.001$ |
| 3b | 82 | 61 | 5.77 | 43.0 | $<.001$ |
| 4b | 70 | 86 | 4.37 | 34.4 | $<.001$ |
| 5b | 94 | 82 | 5.33 | 49.6 | $<.001$ |
| 6b | 74 | 71 | 5.64 | 47.7 | $<.001$ |
| 7b | 74 | 68 | 5.13 | 38.3 | $<.001$ |
| 8b | 56 | 49 | 3.43 | 11.2 | $<.001$ |
| Mean | | | 4.96 | | |

### b. *Discussion*

From the index data we may conclude that the pupils do not choose at random: they seem to know to some extent where their choices will be met by a positive rejoinder. A more direct analysis of the problem of sociopreferential "perception" nevertheless appears to be of importance, and such an analysis will be made below (chap. 7).

The marked difference between the mixed and the non-mixed classes may be due to the low number of intersexual preferences (cf. below, this chapter) and the effect this has of causing a more constricted choice area in classes with both boys and girls. If we consider this sex cleavage to be a decisive characteristic of the mixed classes, it may be rather puzzling to call them at the same time better "integrated". It is obvious that the term "index of group coherence or integration" (CRISWELL 1947, p. 264) is not quite free from the type of "sub-purity" which may lead to confusion of operational definition and pre-operational usage. Of course, the expressions "group coherence" and "integration" *may* be defined technically in terms of positive sociopreferential reciprocity, but it seems better to allow the conceptual purification to be followed by a terminological one, since the term "integration" is conventionally employed to refer to a somewhat vague, but definitely wider field of phenomena. If we limit our considerations to the positive choices reciprocated, it is,

Table 5.16. The Distribution of Negative Choices Made (*n*)
(*M*, *F*, and *MF* Classes)

| Class | Number of pupils | Number of negative choices made | | | | | | | | Total | *M* | *S.D.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | |
| 3m | 26 | 6 | 7 | 10 | 1 | 2 | | | | 38 | 1.46 | 1.14 |
| 4m | 34 | 10 | 13 | 4 | 6 | 0 | 1 | | | 44 | 1.29 | 1.24 |
| 5m | 23 | 8 | 6 | 5 | 3 | 1 | | | | 29 | 1.26 | 1.21 |
| 6m | 25 | 17 | 1 | 4 | 3 | | | | | 18 | 0.72 | 1.14 |
| 7m | 26 | 16 | 8 | 1 | 1 | | | | | 13 | 0.50 | 0.76 |
| 8m | 19 | 18 | 1 | | | | | | | 1 | 0.05 | 0.22 |
| *M* | 153 | 75 | 36 | 24 | 14 | 3 | 1 | | | 143 | 0.93 | 1.14 |
| 3f | 29 | 12 | 9 | 3 | 2 | 3 | | | | 33 | 1.14 | 1.33 |
| 4f | 35 | 12 | 6 | 6 | 7 | 2 | 1 | 1 | | 58 | 1.66 | 1.62 |
| 5f | 23 | 10 | 2 | 4 | 2 | 1 | 3 | 1 | | 41 | 1.78 | 2.02 |
| 6f | 25 | 12 | 5 | 4 | 1 | 3 | | | | 28 | 1.12 | 1.39 |
| 7f | 25 | 1 | 5 | 9 | 7 | 3 | | | | 56 | 2.24 | 1.05 |
| 8f | 23 | 16 | 3 | 2 | 0 | 1 | 1 | | | 16 | 0.70 | 1.36 |
| *F* | 160 | 63 | 30 | 28 | 19 | 13 | 5 | 2 | | 232 | 1.45 | 1.55 |
| 3mf | 4<br>38 | 8 | 10 | 8 | 6 | 5 | 0 | 1 | | 70 | 1.84 | 1.50 |
| 4mf | 34 | 6 | 4 | 6 | 8 | 5 | 3 | 0 | 2 | 89 | 2.62 | 1.91 |
| 5mf | 32 | 6 | 7 | 9 | 7 | 2 | 1 | | | 59 | 1.85 | 1.32 |
| 6mf | 37 | 26 | 1 | 0 | 4 | 3 | 3 | | | 40 | 1.08 | 1.80 |
| 7mf | 30 | 15 | 7 | 6 | 1 | 1 | | | | 26 | 0.87 | 1.07 |
| 8mf | 24 | 10 | 6 | 7 | 1 | | | | | 23 | 0.96 | 0.95 |
| *MF* | 195 | 71 | 35 | 36 | 27 | 16 | 7 | 1 | 2 | 307 | 1.57 | 1.61 |

for instance, usually regarded as important how they are distributed within the group (cf. EDWARDS 1948, p. 374 et seq.), a problem not considered in the CRISWELL quotient. If we disregard the term, however, and simply consider the indices to be compressed expressions for the number of positive choices reciprocated as related to a chance distribution, they seem useful for structural comparisons between different groups.

Perhaps a higher degree of positive reciprocity may be interpreted as being related to a higher degree of "chooser-relatedness" in the preferences. An interaction partner may be chosen because he is considered to be a good worker (in a working context; "chosen-relatedness" only) or because I,

Table 5.17. The Distribution of Negative Choices Made (*n*)
(*AB* Classes)

| Class | Number of pupils | Number of negative choices made | | | | | | | | | | Total | *M* | *S.D.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | | |
| 3a | 31 | 12 | 6 | 3 | 5 | 4 | 0 | 0 | 1 | | | 50 | 1.61 | 1.78 |
| 4a | 31 | 7 | 7 | 7 | 4 | 5 | 1 | | | | | 58 | 1.87 | 1.50 |
| 5a | 31 | 1 | 3 | 10 | 7 | 7 | 1 | 0 | 1 | 0 | 1 | 93 | 3.00 | 1.77 |
| 6a | 27 | 5 | 4 | 13 | 2 | 1 | 2 | | | | | 50 | 1.85 | 1.35 |
| 7a | 30 | 14 | 8 | 7 | 1 | | | | | | | 25 | 0.83 | 0.91 |
| 8a | 30 | 13 | 3 | 8 | 2 | 0 | 3 | 1 | | | | 46 | 1.53 | 1.79 |
| 3b | 28 | 12 | 1 | 7 | 3 | 1 | 3 | 1 | | | | 49 | 1.75 | 1.90 |
| 4b | 32 | 8 | 11 | 5 | 7 | 1 | | | | | | 46 | 1.44 | 1.19 |
| 5b | 32 | 6 | 5 | 6 | 7 | 2 | 3 | 1 | 1 | 1 | | 82 | 2.56 | 2.11 |
| 6b | 31 | 22 | 4 | 3 | 1 | 0 | 1 | | | | | 18 | 0.58 | 1.15 |
| 7b | 29 | 9 | 8 | 6 | 3 | 2 | 1 | | | | | 42 | 1.45 | 1.40 |
| 8b | 21 | 16 | 2 | 3 | | | | | | | | 8 | 0.38 | 0.74 |
| *AB* | 353 | 125 | 62 | 78 | 42 | 23 | 15 | 3 | 3 | 1 | 1 | 567 | 1.61 | 1.67 |

the chooser, have experienced interaction with him and found that *we* fit together ("chooser-relatedness"). Starting from such an interpretation it is natural to find the highest indices in the *AB* Classes where the pupils had more regular experience of group work and through it also had a greater chance to find out their reactions to each other. In classes where only a few possibilities for social contacts exist within school work, it is of course more probable that choices will be led by general considerations about the chosen, his "perceived" (perhaps stereotyped) "attributes". Then choice concentrations on certain individuals ("prestige-centers") lay near at hand (cf. above the sociodynamic effect), and — as a consequence — the proportion of reciprocations decreases.

Can this general interpretative hypothesis be applied also to other differences disclosed in our data? At first glance perhaps the values of lower and higher age levels surprise the reader, since it seems usual to expect a gradually increasing integration the longer individuals have been together. The cause of the result here may possibly be explained by analogy with the argument above, as the younger pupils may be thought to choose to a greater extent on a personal basis (and thus not seldom their friends), whereas the older pupils to a greater extent choose on a more specific and objective basis. If this hypothetical explanation is correct, the

Table 5.18. A Comparison between Two Forms (*p*/*n*-quotients)

| Class | Age level | Sex | Experimental form | | | "Normal" form | | |
|---|---|---|---|---|---|---|---|---|
| | | | *p* | *n* | *p*/*n* | *p* | *n* | *p*/*n* |
| Z1 | 4 | M+F | 188 | 80 | 2.35 | — | — | — |
| Z2 | 7 | M | 98 | 19 | 5.16 | — | — | — |
| Z3 | 7 | F | 102 | 49 | 2.08 | — | — | — |
| Z4 | 4 | M+F | 159 | 64 | 2.48 | 189 | 47 | 4.02 |
| Z5 | 4 | F | 216 | 154 | 1.40 | 231 | 110 | 2.10 |

correlations between the results in more personal choice aspects and the results in more formalized choice aspects should be higher in the lower classes than in the higher. This problem will be discussed in chap. 6.

Analogously, could the tendency to differences between boys and girls be so described that the preferences of the boys could be attributed to a more chooser-related basis than those of the girls? If so, we should expect to find more chooser-related choice motivations among the boys than among the girls. This problem will be discussed in chap. 7.

## 4. Negative Choices Made (*n*)

### A. *Data survey*

Tables 5.16 and 5.17 give a survey of outgoing negative choices. We find a fairly large -*N* plurel: as many as 39 % of the pupils make no negative choices at all. It is fairly seldom (11 %) that more than three rejections are made. In all, 1249 negative choices are found in our population as against 4815 positive choices, which gives a *p*/*n* ratio of 3.86. The distribution will therefore approach that of the typical *J*-curve (as has been the case also in earlier investigations). The individuals with *n*-values above $M + 1\ S.D.$ ("negatively super-selecting"; "super-*n*") comprise 17.3 %; the corresponding low category ("negatively sub-selecting"; "sub-*n*") comprises 12.9 %.

As a rule we find more negative choices among the younger children than among the older ones: for the grade levels 3—5 the average is 1.81, for the grade levels 6—8 it is 0.99. Especially in the boy classes we find a marked and successive decrease: 1.46 — 1.29 — 1.26 — 0.72 — 0.50 — 0.05. The values of the girl classes are less regular, but are — with one exception

## Table 5.19. The Distribution of Choices in *Z* Classes

| Var. | Class | Number of pupils | Number of choices | | | | | | | | | | | | | | | | | | | | | | | | | | Total | *M* | *S.D.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | | | |
| $p$ | Z1 | 33 | | 1 | 3 | 4 | 5 | 2 | 10 | 2 | 2 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | | | | | | | | | | 188 | 5.70 | 3.16 |
| | Z2 | 23 | | 1 | 0 | 9 | 4 | 6 | 1 | 1 | 0 | 0 | 0 | 1 | | | | | | | | | | | | | | | 98 | 4.26 | 1.96 |
| | Z3 | 27 | | | 3 | 13 | 5 | 2 | 2 | 1 | 1 | | | | | | | | | | | | | | | | | | 102 | 3.78 | 1.50 |
| | Z4e | 32 | | | 3 | 8 | 4 | 4 | 5 | 2 | 5 | 1 | | | | | | | | | | | | | | | | | 159 | 4.97 | 2.10 |
| | Z4n | 32 | | | | 2 | 4 | 10 | 2 | 7 | 7 | | | | | | | | | | | | | | | | | | 189 | 5.91 | 1.59 |
| | Z5e | 35 | | | 1 | 2 | 6 | 8 | 2 | 5 | 6 | 2 | 2 | 1 | | | | | | | | | | | | | | | 216 | 6.17 | 2.23 |
| | Z5n | 35 | | | | | 4 | 2 | 9 | 11 | 8 | 0 | 1 | | | | | | | | | | | | | | | | 231 | 6.60 | 1.37 |
| $\overline{p}$ | Z1 | 33 | | 5 | 3 | 0 | 3 | 6 | 2 | 3 | 5 | 1 | 3 | 1 | 1 | | | | | | | | | | | | | | 188 | 5.70 | 3.21 |
| | Z2 | 23 | 1 | 4 | 2 | 3 | 1 | 6 | 2 | 2 | 0 | 1 | 0 | 0 | 1 | | | | | | | | | | | | | | 98 | 4.26 | 2.88 |
| | Z3 | 27 | 1 | 4 | 5 | 7 | 2 | 3 | 2 | 0 | 0 | 1 | 0 | 1 | 1 | | | | | | | | | | | | | | 102 | 3.78 | 2.95 |
| | Z4e | 32 | 4 | 3 | 1 | 5 | 2 | 5 | 3 | 2 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | | | | | | | | | | | 159 | 4.97 | 3.77 |
| | Z4n | 32 | 3 | 1 | 3 | 4 | 2 | 4 | 4 | 2 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 1 | | | | | | | | | | | 189 | 5.91 | 4.20 |
| | Z5e | 35 | 4 | 3 | 3 | 0 | 7 | 4 | 4 | 1 | 0 | 2 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | | | 216 | 6.17 | 5.69 |
| | Z5n | 35 | 1 | 4 | 1 | 2 | 6 | 7 | 5 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 2 | | | | | | 231 | 6.60 | 5.49 |
| $n$ | Z1 | 33 | 2 | 8 | 10 | 5 | 5 | 1 | 2 | | | | | | | | | | | | | | | | | | | | 80 | 2.42 | 1.54 |
| | Z2 | 23 | 15 | 3 | 2 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | 19 | 0.83 | 1.44 |
| | Z3 | 27 | 8 | 6 | 6 | 2 | 1 | 3 | 1 | | | | | | | | | | | | | | | | | | | | 49 | 1.81 | 1.82 |
| | Z4e | 32 | 4 | 8 | 12 | 4 | 2 | 1 | 0 | 1 | | | | | | | | | | | | | | | | | | | 64 | 2.00 | 1.50 |
| | Z4n | 32 | 11 | 5 | 9 | 5 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | 47 | 1.47 | 1.37 |
| | Z5e | 35 | | 1 | 7 | 8 | 5 | 4 | 3 | 2 | 3 | 1 | 1 | | | | | | | | | | | | | | | | 154 | 4.40 | 2.32 |
| | Z5n | 35 | | 3 | 6 | 14 | 8 | 3 | 1 | | | | | | | | | | | | | | | | | | | | 110 | 3.14 | 1.17 |
| $\bar{n}$ | Z1 | 33 | 14 | 4 | 4 | 4 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | | | | | | | | | | | | 80 | 2.42 | 3.61 |
| | Z2 | 23 | 14 | 5 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | 19 | 0.83 | 1.40 |
| | Z3 | 27 | 9 | 8 | 2 | 3 | 1 | 2 | 1 | 0 | 1 | | | | | | | | | | | | | | | | | | 49 | 1.81 | 2.15 |
| | Z4e | 32 | 14 | 5 | 2 | 4 | 2 | 2 | 0 | 1 | 1 | 0 | 1 | | | | | | | | | | | | | | | | 64 | 2.00 | 2.64 |
| | Z4n | 32 | 10 | 10 | 7 | 2 | 0 | 2 | 0 | 1 | | | | | | | | | | | | | | | | | | | 47 | 1.47 | 1.66 |
| | Z5e | 35 | 6 | 5 | 6 | 4 | 4 | 3 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 154 | 4.40 | 5.50 |
| | Z5n | 35 | 11 | 7 | 3 | 3 | 3 | 2 | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | | | | | | | | 110 | 3.14 | 4.40 |

*Key: e* = experimental form, *n* = "normal" form.

Table 5.20. The Distribution of Negative Choices Received ($\bar{n}$)
($M$, $F$, and $MF$ Classes)

| Class | Number of pupils | Number of negative choices received | | | | | | | | | | | | | | Total | *M* | *S.D.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | | | |
| 3m | 27 | 10 | 8 | 5 | 2 | 0 | 0 | 0 | 2 | | | | | | | 38 | 1.41 | 1.87 |
| 4m | 34 | 13 | 11 | 6 | 1 | 0 | 1 | 1 | 1 | | | | | | | 44 | 1.29 | 1.71 |
| 5m | 23 | 8 | 10 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | | | | 29 | 1.26 | 2.07 |
| 6m | 26 | 14 | 9 | 1 | 1 | 1 | | | | | | | | | | 18 | 0.69 | 1.01 |
| 7m | 26 | 16 | 9 | 0 | 0 | 1 | | | | | | | | | | 13 | 0.50 | 0.86 |
| 8m | 19 | 18 | 1 | | | | | | | | | | | | | 1 | 0.05 | 0.22 |
| *M* | 155 | 79 | 48 | 15 | 5 | 2 | 1 | 1 | 3 | 0 | 0 | 1 | | | | 143 | 0.92 | 1.53 |
| 3f | 30 | 15 | 5 | 6 | 2 | 1 | 0 | 1 | | | | | | | | 33 | 1.10 | 1.47 |
| 4f | 35 | 11 | 12 | 6 | 2 | 1 | 0 | 0 | 1 | 1 | 1 | | | | | 58 | 1.66 | 2.22 |
| 5f | 26 | 10 | 6 | 3 | 3 | 3 | 0 | 0 | 0 | 1 | | | | | | 41 | 1.58 | 1.92 |
| 6f | 25 | 13 | 6 | 3 | 0 | 1 | 0 | 2 | | | | | | | | 28 | 1.12 | 1.76 |
| 7f | 25 | 11 | 5 | 5 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 56 | 2.24 | 3.84 |
| 8f | 23 | 13 | 5 | 4 | 1 | | | | | | | | | | | 16 | 0.70 | 0.93 |
| *F* | 164 | 73 | 39 | 27 | 8 | 6 | 0 | 4 | 1 | 2 | 2 | 0 | 0 | 0 | 2 | 232 | 1.41 | 2.23 |
| 3mf | 38 | 14 | 12 | 2 | 3 | 3 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 70 | 1.84 | 2.74 |
| 4mf | 34 | 12 | 5 | 2 | 3 | 4 | 2 | 2 | 2 | 0 | 1 | 1 | | | | 89 | 2.62 | 2.87 |
| 5mf | 32 | 13 | 4 | 7 | 3 | 1 | 2 | 0 | 0 | 0 | 2 | | | | | 59 | 1.85 | 2.40 |
| 6mf | 37 | 21 | 7 | 3 | 2 | 2 | 1 | 0 | 0 | 1 | | | | | | 40 | 1.08 | 1.79 |
| 7mf | 30 | 19 | 5 | 1 | 2 | 2 | 1 | | | | | | | | | 26 | 0.87 | 1.46 |
| 8mf | 24 | 16 | 5 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | | | | | 23 | 0.96 | 2.14 |
| *MF* | 195 | 95 | 38 | 15 | 13 | 13 | 8 | 3 | 2 | 1 | 5 | 1 | 0 | 0 | 1 | 307 | 1.57 | 2.36 |

only — higher than the values of the corresponding boy classes. The values of the mixed classes are as a rule somewhat higher than the values of the non-mixed classes.

## B. *Discussion*

### a. *The difference between negative and positive choice output*

Whilst in our investigation the $p/n$ ratio was 3.86, JENNINGS in her investigation at the Hudson School found 1045 positive choices as against 587 negative (1950, p. 47, 59) which gives a $p/n$ ratio of 1.78. There may

Table 5.21. The Distribution of Negative Choices Received ($\bar{n}$)
(*AB* Classes)

| Class | Number of pupils | Number of negative choices received | | | | | | | | | | | | | | | | | | | Total | *M* | *S.D.* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | | | |
| 3a | 31 | 11 | 8 | 5 | 3 | 1 | 1 | 1 | 0 | 1 | | | | | | | | | | | 50 | 1.61 | 1.96 |
| 4a | 31 | 18 | 3 | 3 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 58 | 1.87 | 3.87 |
| 5a | 31 | 11 | 4 | 4 | 6 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | | | | | 93 | 3.00 | 4.26 |
| 6a | 27 | 6 | 11 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | | | | | | | 50 | 1.85 | 2.69 |
| 7a | 30 | 20 | 4 | 3 | 1 | 1 | 0 | 0 | 0 | 1 | | | | | | | | | | | 25 | 0.83 | 1.70 |
| 8a | 30 | 14 | 6 | 3 | 3 | 2 | 0 | 0 | 0 | 1 | 1 | | | | | | | | | | 46 | 1.53 | 2.28 |
| 3b | 28 | 8 | 6 | 3 | 8 | 2 | 1 | | | | | | | | | | | | | | 49 | 1.75 | 1.51 |
| 4b | 32 | 15 | 8 | 2 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | | | | | | | | 46 | 1.44 | 2.27 |
| 5b | 32 | 9 | 7 | 2 | 6 | 1 | 2 | 1 | 1 | 1 | 2 | | | | | | | | | | 82 | 2.56 | 2.76 |
| 6b | 31 | 17 | 11 | 2 | 1 | | | | | | | | | | | | | | | | 18 | 0.58 | 0.77 |
| 7b | 29 | 13 | 4 | 4 | 4 | 2 | 2 | | | | | | | | | | | | | | 42 | 1.45 | 1.66 |
| 8b | 21 | 13 | 8 | | | | | | | | | | | | | | | | | | 8 | 0.38 | 0.50 |
| *AB* | 353 | 155 | 80 | 38 | 35 | 17 | 8 | 3 | 1 | 4 | 4 | 1 | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 1 | 567 | 1.61 | 2.54 |

Table 5.22. The Distribution of Negative Choices Reciprocated ($\bar{\bar{n}}$)
($M$, $F$, and $MF$ Classes)

| Class | Number of pupils | Number of negative choices reciprocated | | | | | Total | $M$ | $S.D.$ |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | | | |
| 3m | 26 | 21 | 4 | 0 | 0 | 1 | 8 | 0.31 | 0.84 |
| 4m | 34 | 31 | 2 | 1 | | | 4 | 0.12 | 0.41 |
| 5m | 23 | 21 | 2 | | | | 2 | 0.09 | 0.28 |
| 6m | 25 | 25 | | | | | 0 | 0 | 0 |
| 7m | 26 | 26 | | | | | 0 | 0 | 0 |
| 8m | 19 | 19 | | | | | 0 | 0 | 0 |
| *M* | 153 | 143 | 8 | 1 | 0 | 1 | 14 | 0.09 | 0.42 |
| 3f | 29 | 27 | 2 | | | | 2 | 0.07 | 0.26 |
| 4f | 35 | 32 | 2 | 1 | | | 4 | 0.11 | 0.40 |
| 5f | 23 | 21 | 2 | | | | 2 | 0.09 | 0.28 |
| 6f | 25 | 25 | | | | | 0 | 0 | 0 |
| 7f | 25 | 21 | 4 | | | | 4 | 0.16 | 0.37 |
| 8f | 23 | 23 | | | | | 0 | 0 | 0 |
| *F* | 160 | 149 | 10 | 1 | | | 12 | 0.08 | 0.28 |
| 3mf | 38 | 30 | 8 | | | | 8 | 0.21 | 0.41 |
| 4mf | 34 | 22 | 6 | 3 | 2 | 1 | 22 | 0.65 | 1.07 |
| 5mf | 32 | 25 | 6 | 1 | | | 8 | 0.25 | 0.51 |
| 6mf | 37 | 35 | 2 | | | | 2 | 0.05 | 0.22 |
| 7mf | 30 | 26 | 4 | | | | 4 | 0.13 | 0.35 |
| 8mf | 24 | 21 | 2 | 1 | | | 4 | 0.17 | 0.48 |
| *MF* | 195 | 159 | 28 | 5 | 2 | 1 | 48 | 0.25 | 0.60 |

be several causes for this difference: (a) Jennings' population consisted of girls only (cf. the sex differences in our data); (b) Jennings' investigation did not involve a normal population, since the girls according to her own statement represented "a cross-section of the socially and economically under-privileged" (*op. cit.*, p. 26) in the State of New York; (c) Jennings allowed choices and rejections within a larger choice area; (d) our question concerning negative choices was purposely so formulated that the individuals should not feel forced to answer, whereas the positive question was of the "floor limit" type.

Table 5.23. The Distribution of Negative Choices Reciprocated ($\bar{\bar{n}}$)
(*AB* Classes)

| Class | Number of pupils | Number of negative choices reciprocated | | | | | Total | *M* | *S.D.* |
|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | | | |
| 3a | 31 | 27 | 4 | | | | 4 | 0.13 | 0.35 |
| 4a | 31 | 27 | 3 | 0 | 1 | | 6 | 0.19 | 0.60 |
| 5a | 31 | 23 | 6 | 2 | | | 10 | 0.32 | 0.60 |
| 6a | 27 | 25 | 2 | | | | 2 | 0.07 | 0.26 |
| 7a | 30 | 30 | | | | | 0 | 0 | 0 |
| 8a | 30 | 24 | 4 | 2 | | | 8 | 0.27 | 0.58 |
| 3b | 28 | 25 | 2 | 1 | | | 4 | 0.14 | 0.45 |
| 4b | 32 | 30 | 2 | | | | 2 | 0.06 | 0.24 |
| 5b | 32 | 27 | 4 | 0 | 0 | 1 | 8 | 0.25 | 0.76 |
| 6b | 31 | 31 | | | | | 0 | 0 | 0 |
| 7b | 29 | 25 | 4 | | | | 4 | 0.14 | 0.35 |
| 8b | 21 | 19 | 2 | | | | 2 | 0.10 | 0.30 |
| *AB* | 353 | 313 | 33 | 5 | 1 | 1 | 50 | 0.14 | 0.45 |

In order to clarify to a certain extent how important the last mentioned factor can be, an alternative questionnaire was given to five classes outside our main population (cf. Table 4.2 above). In this questionnaire the positive and the negative question had a more similar formulation ("Have you in your class one or more people you would very much enjoy working with? If so, who?" and "Have you in your class one or more people you would very much dislike working with? If so, who?").

The results from this questionnaire are demonstrated in Tables 5.18 and 5.19. We find that the $p/n$ ratios were lower, on an average, even if one of the classes (boys, grade 7) had as high a ratio as 5.16. In two of the classes both types of questionnaire were given at a 3-month interval. A fairly marked difference caused by the formulation is found. Even though, then, the differences between positive and negative choice output is not of an absolute character, but partly depends on the formulation of the choice question, nevertheless we can report — even in the case of our most similar questions — a clear difference between negative and positive choice output. In the case of the main sample of subjects the zero value may be considered as group-norm (*J*-curves).

### b. *Differences in negative choice output in different classes*

If one — as, for example, SMUCKER (1947) — assumes that when the number of rejections increases, the possibilities of tensions and conflicts within the groups increase too, comparisons between different classes may be interesting. Of course, the diminishing negative choice output among the older children may be interpreted as an increasing solidarity towards the group (cf., e. g., TUMLIRZ 1927, p. 236 et seq.). *Per se*, however, this does not necessarily indicate a lower degree of tension within the class as SMUCKER assumed: it could as well be interpreted as an increasing unwillingness among the pupils to point out to themselves or to others that a specific individual is rejected. The fact that the values of the mixed classes are somewhat higher than those of the non-mixed classes is probably related to the existence of a certain degree of intersexual rejection (cf. below, this chapter). That a high rejection value in certain cases may be directly symptomatic of tensions and disruptions, is clear: the especially high mean of class 5a thus corresponded well with the relatively large amount of conflict-colored interaction found in the classroom observations (cf. below).

## 5. Negative Choices Received ($\bar{n}$)

The distribution of incoming negative choices is very uneven (cf. Tables 5.20 and 5.21). A great number of individuals — often half of the pupils — do not receive any rejections at all (46 % of the total population lack negative choices received; that is, the -$\bar{N}$ plurel is still larger than the -$N$ plurel). A nearly equally large category — for the total population 42 % — receive one, two or three. Otherwise, the negative choices are concentrated on a few individuals, who receive rejections from a plurality of classmates (in one case from as many as 18 out of 31). The form of the distribution is that of the *J*-curve with a more prolonged "tail" than in the former case: the standard deviation is greater. The individuals with $\bar{n}$-values above $M + 1\ S.D.$ ("negatively super-selected"; "super-$\bar{n}$") comprise 12.8 %, whereas the corresponding low category ("negatively sub-selected"; "sub-$\bar{n}$") only comprises 0.9 % due to the abnormal distribution tending towards zero-values.

## 6. Negative Choices Reciprocated ($\bar{\bar{n}}$)

Mutual negative choices are much more rare than mutual positive choices (cf. Tables 5.22 and 5.23). Whilst about every second positive choice

Table 5.24. Different Patterns of Dyadic Choice Relations

| Class | Pattern number | | | | Class | Pattern number | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | | 1 | 2 | 3 | 4 |
| 3m | 70 | 24 | 8 | 8 | 3a | 82 | 36 | 16 | 4 |
| 4m | 90 | 40 | 20 | 4 | 4a | 122 | 58 | 22 | 6 |
| 5m | 56 | 16 | 12 | 2 | 5a | 80 | 48 | 20 | 10 |
| 6m | 60 | 20 | 0 | 0 | 6a | 70 | 28 | 14 | 2 |
| 7m | 68 | 22 | 2 | 0 | 7a | 70 | 26 | 6 | 0 |
| 8m | 56 | 14 | 0 | 0 | 8a | 64 | 34 | 12 | 8 |
| Total | 400 | 136 | 42 | 14 | Total | 488 | 230 | 90 | 30 |
| 3f | 56 | 26 | 14 | 2 | 3b | 82 | 42 | 23 | 4 |
| 4f | 106 | 48 | 12 | 4 | 4b | 70 | 30 | 8 | 2 |
| 5f | 52 | 26 | 12 | 2 | 5b | 94 | 32 | 22 | 8 |
| 6f | 72 | 34 | 12 | 0 | 6b | 74 | 30 | 4 | 0 |
| 7f | 70 | 34 | 18 | 4 | 7b | 74 | 24 | 10 | 4 |
| 8f | 74 | 40 | 6 | 0 | 8b | 56 | 28 | 2 | 2 |
| Total | 430 | 208 | 74 | 12 | Total | 450 | 186 | 69 | 20 |
| 3mf | 84 | 26 | 28 | 8 | *Percentages:* | | | | |
| 4mf | 114 | 40 | 40 | 22 | *M* % | 67.6 | 23.0 | 7.1 | 2.4 |
| 5mf | 90 | 40 | 18 | 8 | | | | | |
| 6mf | 130 | 50 | 14 | 2 | *F* % | 59.4 | 28.7 | 10.2 | 1.7 |
| 7mf | 84 | 30 | 10 | 4 | *MF* % | 59.2 | 23.4 | 12.5 | 4.9 |
| 8mf | 76 | 42 | 12 | 4 | *AB* % | 60.0 | 26.6 | 10.2 | 3.2 |
| Total | 578 | 228 | 122 | 48 | Total % | 60.9 | 25.6 | 10.3 | 3.2 |

*Key:*

1 = number of positive choices given a positive reciprocation ($xPPy$).

2 = number of positive choices given a positive reciprocation on the same level of preference ($xP_1P_1y$, $xP_2P_2y$, etc.).

3 = number of (positive or negative) choices given a sign-different rejoinder ($xPNy$ or $xNPy$).

4 = number of negative choices given a negative reciprocation ($xNNy$).

receives a positive rejoinder, only every tenth negative choice is met by a negative rejoinder. This is related to the fact that a negative choice often goes from much chosen pupils to pupils who are less desired by their classmates. These less "popular" individuals may make rejections, it is true, but it is relatively seldom that they direct their negative choices

Table 5.25. Intercorrelations between the Basic Sociopreferential Variables

I. The Three Positive Variables

| Class | $p/\bar{p}$ | | | $p/\bar{\bar{p}}$ | | | $\bar{p}/\bar{\bar{p}}$ | | |
|---|---|---|---|---|---|---|---|---|---|
| | *N* | Q | *P* | *N* | Q | *P* | *N* | Q | *P* |
| 3m | 26 | .44 | >.3 | 26 | .45 | >.3 | 26 | .95 | .002 |
| 4m | 34 | .33 | >.3 | 34 | .54 | .2 | 34 | .87 | .004 |
| 5m | 23 | .27 | >.3a | 23 | .73 | .1a | 23 | .96 | .002a |
| 6m | 25 | .24 | >.3 | 25 | .74 | .07 | 25 | .82 | .03 |
| 7m | 26 | .00 | >.3 | 26 | .08 | >.3a | 26 | 1.00 | <.001 |
| 8m | 19 | .50 | >.3b | 19 | .30 | >.3b | 19 | 1.00 | <.001b |
| 3f | 29 | — .07 | >.3 | 29 | .21 | >.3 | 29 | .99 | <.001 |
| 4f | 35 | .26 | >.3 | 35 | .34 | >.3 | 35 | 1.00 | <.001 |
| 5f | 23 | — .25 | >.3b | 23 | .11 | >.3a | 23 | .98 | <.001 |
| 6f | 25 | — .35 | >.3c | 25 | — .08 | >.3 | 25 | .97 | <.001 |
| 7f | 25 | — .41 | >.3c | 25 | — .07 | >.3a | 25 | .92 | .007a |
| 8f | 23 | — .42 | >.3 | 23 | — .08 | >.3a | 23 | .94 | .006a |
| 3mf | 38 | — .21 | >.3 | 38 | .16 | >.3 | 38 | .78 | .01 |
| 4mf | 34 | — .23 | >.3 | 34 | .22 | >.3 | 34 | .97 | <.001 |
| 5mf | 32 | .48 | .3 | 32 | .48 | .3 | 32 | .85 | .01 |
| 6mf | 37 | .30 | >.3a | 37 | .60 | .1 | 37 | .76 | .01 |
| 7mf | 30 | .26 | >.3 | 30 | .26 | >.3 | 30 | 1.00 | <.001 |
| 8mf | 24 | .46 | >.3a | 24 | .27 | >.3c | 24 | .71 | .1a |

*Note:* In certain four-field tables the smallest expectation is less than 5. In these cases the following symbols are used:

*a* = the smallest expectation 4.5—4.9
*b* = the smallest expectation 4.0—4.4
*c* = the smallest expectation below 4.0

towards pupils which are generally liked and respected. On the contrary, the rejecting "popular" individual is often given a positive choice in return (cf. Table 5.24 with a survey of different types of two-way choice relations). Since such a small proportion of the negative choices are reciprocated, and the negative choices *per se* are rather few, the absolute number of negative choices reciprocated is very small: on an average 0.14. No less than 89 % of the pupils in the total population lack this type of relation. No pupil has more than four, and in seven of the classes the -$\bar{N}$ plurel covers the total class.

Table 5.26. Intercorrelations between the Basic Sociopreferential Variables

II. The Three Negative Variables

| Class | $n/\bar{n}$ | | | $n/\bar{\bar{n}}$ | | | $\bar{n}/\bar{\bar{n}}$ | | |
|---|---|---|---|---|---|---|---|---|---|
| | *N* | Q | *P* | *N* | Q | *P* | *N* | Q | *P* |
| 3m | 26 | .32 | >.3 | 26 | .25 | >.3c | 26 | 1.00 | .1c |
| 4m | 34 | —.22 | >.3b | 34 | .66 | >.3c | 34 | 1.00 | >.3c |
| 5m | 23 | .78 | .1c | 23 | 1.00 | .3c | 23 | 1.00 | >.3c |
| 6m | 25 | —.30 | >.3c | — | — | — | — | — | — |
| 7m | 26 | —.29 | >.3c | — | — | — | — | — | — |
| 8m | — | — | — | — | — | — | — | — | — |
| 3f | 29 | .33 | >.3 | 29 | 1.00 | >.3c | 29 | 1.00 | >.3c |
| 4f | 35 | —.44 | >.3 | 35 | —.33 | >.3c | 35 | 1.00 | >.3c |
| 5f | 23 | —.11 | >.3b | 23 | 1.00 | >.3c | 23 | .24 | >.3c |
| 6f | 25 | —.38 | >.3 | — | — | — | — | — | — |
| 7f | 25 | —.20 | >.3b | 25 | .24 | >.3c | 25 | 1.00 | .2c |
| 8f | 23 | —.43 | >.3c | — | — | — | — | — | — |
| 3mf | 38 | .08 | >.3 | 38 | .80 | .07c | 38 | .94 | <.001c |
| 4mf | 34 | .23 | >.3 | 34 | .17 | >.3 | 34 | 1.00 | <.001 |
| 5mf | 32 | .28 | >.3 | 32 | .33 | >.3c | 32 | .83 | .06c |
| 6mf | 37 | .85 | .007a | 37 | 1.00 | .2c | 37 | 1.00 | >.3c |
| 7mf | 30 | .41 | >.3 | 30 | 1.00 | .1c | 30 | 1.00 | .02c |
| 8mf | 24 | .13 | >.3c | 24 | 1.00 | >.3c | 24 | 1.00 | .05c |

*Note:* See Table 5.25.

## III. A NOTE ON THE INTERRELATIONS BETWEEN THE SIX BASIC SOCIOPREFERENTIAL VARIABLES

The interrelations between the six basic sociopreferential variables are seen from Tables 5.25 — 5.27. Because of the short ranges and extreme skewness, product-moment correlation was not considered practical for the negative variables. YULE's coefficient of association (Q; cf., e. g., KENDALL 1945, p. 310), although being a relatively crude measure, was considered sufficient for our purpose which was to gain a rough and preliminary picture of the interrelations. To ensure possibilities of comparison, Q was also used for variables where product-moment correlation could have been calculated. In all cases *P*-values were estimated from the four-field tables with the aid of chi-square calculations (with correction for continuity).

The coefficients obtained vary considerably from class to class, but the

Table 5.27. Intercorrelations between the Basic Sociopreferential Variables

III. Positive *v*. Negative Variables

| Class | $p/n$ | | | $\bar{p}/\bar{n}$ | | | $\bar{\bar{p}}/\bar{\bar{n}}$ | | |
|---|---|---|---|---|---|---|---|---|---|
| | *N* | Q | *P* | *N* | Q | *P* | *N* | Q | *P* |
| 3m | 26 | .67 | .1 | 27 | −.36 | >.3a | 26 | .42 | >.3c |
| 4m | 34 | −.22 | >.3 | 34 | −.40 | >.3 | 34 | .30 | >.3c |
| 5m | 23 | .65 | .2c | 23 | −.71 | .1c | 23 | .14 | >.3c |
| 6m | 25 | −.06 | >.3c | 26 | −.57 | .3 | — | — | — |
| 7m | 26 | −.05 | >.3c | 26 | .00 | >.3 | — | — | — |
| 8m | — | — | — | — | — | — | — | — | — |
| 3f | 29 | −.22 | >.3 | 30 | −.95 | <.001 | 29 | −1.00 | >.3c |
| 4f | 35 | .38 | >.3 | 35 | −.59 | .2 | 35 | −.54 | >.3c |
| 5f | 23 | −.25 | >.3b | 26 | −.59 | .2 | 23 | 1.00 | >.3c |
| 6f | 25 | −.08 | >.3 | 25 | −.56 | .3a | — | — | — |
| 7f | 25 | .65 | .2a | 25 | −.52 | >.3 | 25 | −.71 | >.3c |
| 8f | 23 | .26 | >.3c | 23 | .41 | >.3a | — | — | — |
| 3mf | 38 | .52 | .2 | 38 | −.61 | .09 | 38 | −.88 | .01c |
| 4mf | 34 | .13 | >.3 | 34 | −.97 | <.001 | 34 | −.76 | .05 |
| 5mf | 32 | −.13 | >.3 | 32 | −.88 | .004 | 32 | .02 | >.3c |
| 6mf | 37 | −.32 | >.3a | 37 | −.17 | >.3 | 37 | .14 | >.3c |
| 7mf | 30 | .13 | >.3 | 30 | −.77 | .05 | 30 | −1.00 | .1c |
| 8mf | 24 | .06 | >.3b | 24 | −.84 | .06c | 24 | −.20 | >.3c |

*Note:* See Table 5.25.

following trends, at least, are as a rule relatively clear (in cases where the degree of significance is low, some indication may nevertheless be given by the distribution of signs): (a) no systematic relation between outgoing and incoming choices ($p/\bar{p}$, $n/\bar{n}$), (b) a positive correlation between choices received and choices reciprocated ($\bar{p}/\bar{\bar{p}}$, $\bar{n}/\bar{\bar{n}}$), (c) no systematic relation between outgoing positive and negative choices ($p/n$), but (d) a negative relation between incoming positive and negative choices ($\bar{p}/\bar{n}$). None of these findings are unexpected: they could be expected partly *a priori*, partly on the basis of earlier investigations. However, the results are of interest for us in so far as they indicate that the variables on which our subsequent analyses are based are, with respect to interrelations, sufficiently similar to preferential variables in other investigations not to make comparisons and more general conclusions quite impossible.

Table 5.28 gives a series of "chess-board tabulations" of the pupils, and

Table 5.28. Chess-Board Tabulation of the Subjects in the Alfa Experiments (Workmate Choices)

| | 1 +++ | 2 −++ | 3 +−+ | 4 ++− | 5 −−+ | 6 −+− | 7 +−− | 8 −−− |
|---|---|---|---|---|---|---|---|---|
| VIII +++ | 1 | | 1 | | 2 | 4 | 7 | 24 |
| VII −++ | | | | 1 | 1 | 2 | 1 | 10 |
| VI +−+ | 1 | | | | | 1 | 4 | 3 |
| V ++− | | | | | | | 1 | 1 |
| IV −−+ | 1 | | | 1 | | 1 | 1 | 4 |
| III −+− | | | | | | 2 | 3 | 1 |
| II +−− | 1 | | | 7 | | 5 | 8 | 11 |
| I −−− | 3 | | | 4 | | 12 | 6 | 17 |

a. *M* Classes

| | 1 +++ | 2 −++ | 3 +−+ | 4 ++− | 5 −−+ | 6 −+− | 7 +−− | 8 −−− |
|---|---|---|---|---|---|---|---|---|
| VIII +++ | | | 1 | 1 | | 3 | 8 | 15 |
| VII −++ | 1 | | | | 1 | 2 | 8 | 19 |
| VI +−+ | | | | | | 5 | 4 | 4 |
| V ++− | | | | | | 2 | 2 | 1 |
| IV −−+ | | | | | | | | 3 |
| III −+− | | | | | | 2 | | 3 |
| II +−− | 4 | 1 | 1 | 7 | | 10 | 9 | 10 |
| I −−− | | 2 | | 5 | | 6 | 10 | 10 |

b. *F* Classes

| | 1 +++ | 2 −++ | 3 +−+ | 4 ++− | 5 −−+ | 6 −+− | 7 +−− | 8 −−− |
|---|---|---|---|---|---|---|---|---|
| VIII +++ | 1 | 1 | | | | 2 | 16 | 19 |
| VII −++ | | 1 | | 1 | 1 | 1 | 10 | 14 |
| VI +−+ | 3 | | | 2 | | 1 | 3 | 5 |
| V ++− | | | | | | | 2 | 1 |
| IV −−+ | 1 | | 1 | | | 1 | 3 | 3 |
| III −+− | | | | | | 1 | 3 | 5 |
| II +−− | 8 | 2 | 1 | 6 | | 6 | 5 | 10 |
| I −−− | 12 | 3 | 1 | 7 | | 10 | 10 | 12 |

c. *MF* Classes

| | 1 +++ | 2 −++ | 3 +−+ | 4 ++− | 5 −−+ | 6 −+− | 7 +−− | 8 −−− |
|---|---|---|---|---|---|---|---|---|
| VIII +++ | 2 | 1 | | 5 | 1 | 3 | 27 | 23 |
| VII −++ | 2 | | 4 | 3 | | 6 | 21 | 27 |
| VI +−+ | 3 | | | 5 | | 2 | 9 | 6 |
| V ++− | | | | 1 | | 2 | 5 | 4 |
| IV −−+ | 1 | 1 | | 1 | | 1 | 6 | 5 |
| III −+− | 1 | | 1 | | 1 | 4 | 3 | 6 |
| II +−− | 5 | 2 | | 15 | | 19 | 14 | 15 |
| I −−− | 10 | 3 | 2 | 5 | | 32 | 13 | 25 |

d. *AB* Classes

Tables 5.29 and 5.30 summarize some of the trends in the form of percentages for positive and negative choice patterns. The positive and negative correlations between the variables make it certain that the distribution on the "chess-board" is not a chance one. Certain patterns are more "natural" than others. The series of percentages for the distribution of different positive choice patterns (Table 5.29) form a

Table 5.29. The Distribution of Different Positive Choice Patterns (Percentages)

| Positive choice pattern | Classes | | | | Total |
|---|---|---|---|---|---|
| | *M* | *F* | *MF* | *AB* | |
| VIII<br>+++ | 25.5 | 17.5 | 20.0 | 17.6 | *19.5* |
| VII<br>−++ | 9.8 | 19.4 | 14.4 | 17.8 | *15.9* |
| VI<br>+−+ | 5.9 | 8.1 | 7.2 | 7.1 | *7.1* |
| V<br>++− | 1.3 | 3.1 | 1.5 | 3.4 | *2.6* |
| IV<br>−−+ | 5.2 | 1.9 | 4.6 | 4.2 | *4.1* |
| III<br>−+− | 3.9 | 3.1 | 4.6 | 4.5 | *4.2* |
| II<br>+−− | 20.9 | 26.3 | 19.5 | 19.8 | *21.1* |
| I<br>−−− | 27.5 | 20.6 | 28.2 | 25.5 | *25.6* |
| Total number | 153 | 160 | 195 | 353 | 861 |

clear *U*-curve with one maximum in the +++ pattern and the other maximum in the ——— pattern. The continuous development between these two extremes seems partly to corroborate that our initial, aprioristic ranking of the different patterns as to "positivity" (cf. chap. 3: III: 4) was, in fact, meaningful. Thus, for instance, —++ was regarded as "more positive" than +—+, and +—+ as "more positive" than ++—. As a consequence of the positive relation between $\overline{p}$ and $\overline{\overline{p}}$, those patterns which have different signs for these two variables (III—VI) are the least frequent. The distribution of different negative choice patterns (Table 5.30) is similar in several respects, although it is more irregular as a consequence of the skewness of the single variables: the patterns characterized by low "negativity" are thus more frequent than patterns characterized by high "negativity".

On the whole, the findings on interrelations show that the basic socio-preferential variables are sufficiently unrelated to make a multi-variable assessment desirable, yet also sufficiently interrelated to make the present

Table 5.30. The Distribution of Different Negative Choice Patterns (Percentages)

| Negative choice pattern | Classes | | | | Total |
|---|---|---|---|---|---|
| | *M* | *F* | *MF* | *AB* | |
| 1<br>+++ | 4.6 | 3.1 | 12.8 | 6.8 | *7.1* |
| 2<br>−++ | 0 | 1.9 | 3.6 | 2.0 | *2.0* |
| 3<br>+−+ | 0.7 | 1.3 | 1.5 | 2.0 | *1.5* |
| 4<br>++− | 8.5 | 8.1 | 8.2 | 9.9 | *8.9* |
| 5<br>−−+ | 2.0 | 0.6 | 0.5 | 0.6 | *0.8* |
| 6<br>−+− | 17.6 | 18.8 | 11.3 | 19.5 | *17.2* |
| 7<br>+−− | 20.3 | 25.6 | 26.7 | 27.8 | *25.8* |
| 8<br>−−− | 46.4 | 40.6 | 35.4 | 31.4 | *36.7* |
| Total number | 153 | 160 | 195 | 353 | 861 |

type of condensation of the six variables in a two-dimensional diagram possible and meaningful.

## IV. SEX CLEAVAGE

As, in this chapter, we are giving an introductory idea of the general characteristics of the main sociopreferential variables, we find it of importance also to discuss briefly the occurrence and non-occurrence of positive and negative choosing between the two sexes, a question which has been of considerable interest to workers in this field (cf., e. g., investigations by Moreno 1934, Criswell 1939 a, Bronfenbrenner 1944 a, Bonney 1954, Johannesson 1954). This problem is of course also of direct concern to people dealing with the practical application of group work in the classroom.

The occurrence of intersexual choices in all the eighteen mixed classes has been investigated, and the results are summarized in Tables 5.31—5.35. Intersexual workmate choices made by boys are demonstrated in Table

Table 5.31. Sex Cleavage in Workmate Choices:
Boys as Choice-Makers

| Class | Number of boys | Choice distribution | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Total | | | Received by boys | | | Received by girls | | |
| | | + | (+) | − | + | (+) | − | + | (+) | − |
| 3mf | 18 | 90 | 198 | 34 | 88 | 193 | 33 | 2 | 5 | 1 |
| 3a | 14 | 56 | 140 | 16 | 54 | 137 | 14 | 2 | 3 | 2 |
| 3b | 16 | 84 | 180 | 13 | 84 | 180 | 10 | 0 | 0 | 3 |
| 4mf | 14 | 95 | 179 | 32 | 95 | 179 | 32 | 0 | 0 | 0 |
| 4a | 14 | 70 | 154 | 26 | 70 | 154 | 0 | 0 | 0 | 26 |
| 4b | 15 | 67 | 157 | 20 | 59 | 141 | 5 | 8 | 16 | 15 |
| 3−4 | 91 | 462 | 1008 | 141 | 450 | 984 | 94 | 12 | 24 | 47 |
| 5mf | 21 | 133 | 259 | 38 | 127 | 250 | 38 | 6 | 9 | 0 |
| 5a | 18 | 95 | 203 | 63 | 89 | 197 | 32 | 6 | 6 | 31 |
| 5b | 17 | 97 | 199 | 37 | 94 | 196 | 29 | 3 | 3 | 8 |
| 6mf | 21 | 152 | 278 | 4 | 151 | 277 | 1 | 1 | 1 | 3 |
| 6a | 11 | 56 | 122 | 17 | 50 | 116 | 13 | 6 | 6 | 4 |
| 6b | 12 | 58 | 130 | 3 | 58 | 130 | 3 | 0 | 0 | 0 |
| 5−6 | 100 | 591 | 1191 | 162 | 569 | 1166 | 116 | 22 | 25 | 46 |
| 7mf | 16 | 87 | 183 | 15 | 85 | 181 | 15 | 2 | 2 | 0 |
| 7a | 14 | 58 | 142 | 13 | 58 | 142 | 6 | 0 | 0 | 7 |
| 7b | 16 | 72 | 168 | 18 | 57 | 140 | 10 | 15 | 28 | 8 |
| 8mf | 11 | 62 | 128 | 5 | 61 | 127 | 3 | 1 | 1 | 2 |
| 8a | 13 | 56 | 131 | 28 | 50 | 122 | 28 | 6 | 9 | 0 |
| 8b | 9 | 39 | 90 | 3 | 27 | 78 | 3 | 12 | 12 | 0 |
| 7−8 | 79 | 374 | 842 | 82 | 338 | 790 | 65 | 36 | 52 | 17 |

*Key:* + = Positive choices (non-weighted scoring)
(+) = Positive choices (weighted scoring)
— = Negative choices.

5.31, those made by girls in Table 5.32. Percentage calculations, especially with respect to different age levels, are given in Table 5.33. Tables 5.31—5.33 all deal with workmate choices, while Table 5.34 gives a survey of intersexual choices in a semi-personal choice situation (Questionnaire IV), and Table 5.35, finally, demonstrates the intersexual choices in a personal choice situation (friendship reports).

Table 5.32 Sex Cleavage in Workmate Choices:
Girls as Choice-Makers

| Class | Number of girls | Choice distribution | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Total | | | Received by boys | | | Received by girls | | |
| | | + | (+) | − | + | (+) | − | + | (+) | − |
| 3mf | 20 | 125 | 245 | 36 | 4 | 6 | 6 | 121 | 239 | 30 |
| 3a | 17 | 104 | 206 | 34 | 5 | 5 | 2 | 99 | 201 | 32 |
| 3b | 12 | 59 | 131 | 36 | 0 | 0 | 11 | 59 | 131 | 25 |
| 4mf | 20 | 128 | 248 | 57 | 0 | 0 | 8 | 128 | 248 | 49 |
| 4a | 17 | 131 | 233 | 32 | 0 | 0 | 7 | 131 | 233 | 25 |
| 4b | 17 | 89 | 191 | 26 | 9 | 13 | 9 | 80 | 178 | 17 |
| 3—4 | 103 | 636 | 1254 | 221 | 18 | 24 | 43 | 618 | 1230 | 178 |
| 5mf | 11 | 53 | 119 | 21 | 4 | 5 | 2 | 49 | 114 | 19 |
| 5a | 13 | 63 | 141 | 30 | 6 | 5 | 5 | 57 | 136 | 25 |
| 5b | 15 | 79 | 169 | 45 | 2 | 2 | 26 | 77 | 167 | 19 |
| 6mf | 16 | 97 | 193 | 36 | 4 | 12 | 5 | 93 | 181 | 31 |
| 6a | 16 | 78 | 174 | 33 | 12 | 13 | 3 | 66 | 161 | 30 |
| 6b | 19 | 87 | 201 | 15 | 3 | 3 | 5 | 84 | 198 | 10 |
| 5—6 | 90 | 457 | 997 | 180 | 31 | 40 | 46 | 426 | 957 | 134 |
| 7mf | 14 | 80 | 164 | 11 | 4 | 5 | 1 | 76 | 159 | 10 |
| 7a | 16 | 79 | 175 | 12 | 12 | 14 | 1 | 67 | 161 | 11 |
| 7b | 13 | 70 | 148 | 24 | 11 | 15 | 12 | 59 | 133 | 12 |
| 8mf | 13 | 64 | 142 | 18 | 0 | 0 | 0 | 64 | 142 | 18 |
| 8a | 17 | 88 | 187 | 18 | 27 | 46 | 13 | 61 | 141 | 5 |
| 8b | 12 | 66 | 138 | 5 | 10 | 11 | 0 | 56 | 127 | 5 |
| 7—8 | 85 | 447 | 954 | 88 | 64 | 91 | 27 | 383 | 863 | 61 |

*Key:* See Table 5.31.

## 1. Data Survey

*The general occurrence of intersexual choices.* Intersexual choices occur very infrequently. Positive workmate choices between the sexes are totally missing in three of the eighteen mixed classes (in four classes there are no positive choices from girls to boys, and in five classes no positive choices from boys to girls). Negative workmate choices between the sexes are totally missing in one class (in two classes there are no negative choices from girls to boys, and in six classes no negative choices from boys to

Table 5.33. Sex Cleavage in Workmate Choices and Age Level: Percentage Calculations

| Classes | Boy-made positive choices received by | | | | Girl-made positive choices received by | | | |
|---|---|---|---|---|---|---|---|---|
| | Boys | | Girls | | Boys | | Girls | |
| | C | % | C | % | C | % | C | % |
| 3—4 | 450 | *97.4* | 12 | *2.6* | 18 | *2.8* | 618 | *97.2* |
| 5—6 | 569 | *96.3* | 22 | *3.7* | 31 | *6.8* | 426 | *93.2* |
| 7—8 | 338 | *90.4* | 36 | *9.6* | 64 | *14.3* | 383 | *85.7* |
| 3—4mf | 183 | *98.9* | 2 | *1.1* | 4 | *1.6* | 249 | *98.4* |
| 5—6mf | 278 | *97.5* | 7 | *2.5* | 8 | *5.3* | 142 | *94.7* |
| 7—8mf | 146 | *98.0* | 3 | *2.0* | 4 | *2.8* | 140 | *97.2* |
| 3—4ab | 267 | *96.4* | 10 | *3.6* | 14 | *3.7* | 369 | *96.3* |
| 5—6ab | 291 | *95.1* | 15 | *4.9* | 23 | *7.5* | 284 | *92.5* |
| 7—8ab | 192 | *85.3* | 33 | *14.7* | 60 | *19.8* | 243 | *80.2* |
| 3—8 | 1357 | *95.1* | 70 | *4.9* | 113 | *7.3* | 1427 | *92.7* |

*Key:* C = Number of choices.

girls). Intersexual friendship reports are totally missing in nine of the eighteen mixed classes, and intersexual choices of being together "in the recess" are totally missing in seven of the twelve *AB* Classes (Questionnaire IV was not given to the *MF* Classes). In the classes where intersexual choices occur, they are generally very few.

*The relative occurrence of intersexual choices in different preference aspects.* A difference exists between our "formalized" preference aspect (choice of workmates) on the one hand, and our "semi-personal" aspect (choice of companions in the recess) on the other. In the formalized aspect a total of 6.2 % positive intersexual choices (out of 2967) are found against only 2.7 % (out of 823) in the semi-personal one. If we start from what might be called, for short, an odd-even categorization of individuals (instead of from proportions of choices), we obtain $P < .001$.[8]

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[8] The odd-even categorization of individuals (used in order to make a simple chi-square calculation defendable) means partly that we start from the number of individuals giving a particular kind of choice instead of from the number of choices, partly that we compare the number of "odd" individuals giving one type of choice with the number of "even" individuals giving another type of choice. Thus, when comparing the workmate

Table 5.34. Sex Cleavage in Reports of Being together during Recreation in the School Playground:
Choice Wishes, Guessed Choice Wishes, and Stated Choice Facts

| Class | Choice Wishes (a) | | | Guessed Choice Wishes (b) | | | Stated Choice Facts | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Habitual (c) | | | Temporary (d) | | |
| | *T* | *B/G* | *G/B* | *T* | *B/G* | *G/B* | *T* | *B/G* | *G/B* | *T* | *B/G* | *G/B* |
| 3a | 75 | 0 | 0 | 43 | 0 | 0 | 58 | 0 | 0 | 44 | 0 | 4 |
| 3b | 79 | 0 | 0 | 46 | 0 | 0 | 53 | 0 | 0 | 46 | 2 | 0 |
| 4a | 93 | 0 | 0 | 57 | 0 | 0 | 64 | 0 | 0 | 53 | 0 | 0 |
| 4b | 55 | 0 | 0 | 40 | 0 | 0 | 42 | 0 | 0 | 37 | 0 | 0 |
| 3—4 | 302 | 0 | 0 | 186 | 0 | 0 | 217 | 0 | 0 | 180 | 2 | 4 |
| 5a | 59 | 0 | 0 | 45 | 0 | 0 | 60 | 0 | 4 | 58 | 0 | 4 |
| 5b | 77 | 0 | 0 | 59 | 0 | 0 | 63 | 0 | 0 | 104 | 0 | 7 |
| 6a | 62 | 0 | 3 | 46 | 0 | 0 | 61 | 0 | 0 | 61 | 0 | 0 |
| 6b | 73 | 0 | 1 | 54 | 0 | 0 | 62 | 1 | 0 | 73 | 4 | 0 |
| 5—6 | 271 | 0 | 4 | 204 | 0 | 0 | 246 | 1 | 4 | 296 | 4 | 11 |
| 7a | 88 | 0 | 12 | 31 | 0 | 1 | 75 | 0 | 7 | 48 | 0 | 1 |
| 7b | 63 | 2 | 0 | 35 | 0 | 0 | 54 | 0 | 0 | 37 | 0 | 4 |
| 8a | 60 | 0 | 4 | 27 | 0 | 0 | 59 | 0 | 0 | 44 | 0 | 1 |
| 8b | 39 | 0 | 0 | 26 | 0 | 0 | 40 | 0 | 0 | 31 | 0 | 6 |
| 7—8 | 250 | 2 | 16 | 119 | 0 | 1 | 228 | 0 | 7 | 160 | 0 | 12 |
| 3—8 | 823 | 2 | 20 | 509 | 0 | 1 | 691 | 1 | 11 | 636 | 6 | 27 |

*Key:* *T* = total number of choices
*B/G* = number of choices from boys to girls
*G/B* = number of choices from girls to boys

aspect (*W*) with the recess companion aspect (*R*), we start from the sociomatrices and find out (a) the number of odd rows with all positive *W* choices given within the sex; (b) the number of odd rows with at least one positive *W* choice given to the opposite sex; (c) the number of even rows with all positive *R* choices given within the sex; and (d) the number of even rows with at least one positive *R* choice given to the opposite sex. These items are then introduced in a simple four-field table and conventional calculations applied. — In the most personal aspect (friendship reports) only 1.3 % of the 1479 choices were intersexual. However, we do not include this aspect in our comparisons above, since it is probable that the 3-choice request employed in this case forced some pupils to exclude intersexual choices (cf. below, our discussion of preference levels).

Table 5.35. Sex Cleavage in Friendship Reports

| Class | *T* | *B/G* | *G/B* |
|---|---|---|---|
| 3mf | 110 | 0 | 0 |
| 3a | 83 | 0 | 0 |
| 3b | 81 | 0 | 0 |
| 4mf | 102 | 0 | 0 |
| 4a | 89 | 0 | 0 |
| 4b | 86 | 1 | 2 |
| 3–4 | 551 | 1 | 2 |
| 5mf | 92 | 0 | 0 |
| 5a | 85 | 0 | 0 |
| 5b | 88 | 0 | 0 |
| 6mf | 110 | 0 | 4 |
| 6a | 73 | 1 | 0 |
| 6b | 86 | 0 | 2 |
| 5–6 | 534 | 1 | 6 |
| 7mf | 90 | 0 | 0 |
| 7a | 68 | 0 | 1 |
| 7b | 59 | 1 | 0 |
| 8mf | 65 | 1 | 0 |
| 8a | 72 | 0 | 4 |
| 8b | 40 | 0 | 2 |
| 7–8 | 394 | 2 | 7 |
| 3–8 | 1479 | 4 | 15 |

*Key:* See Table 5.34.

*The relative occurrence of intersexual choices in positive and negative choice situations.* Whilst only 6.2 % of the positive workmate choices (out of 2967) are intersexual, no less than 25.9 % of the negative ones (out of 874) affect the opposite sex — a rather marked difference ($P < .001$, calculated as above).

*The relative occurrence of intersexual choices on different preference levels.* The percentages dealt with so far all refer to the *number* of choices. It is, of course, also possible to start with weighted scoring (non-weighted scoring is given by + in the tables and weighted scoring by (+)); it may be of interest to observe that the latter gives a still lower percentage. Thus, against the 6.2 % of positive *choices* (out of 2967) in favor of the opposite sex, we find only 4.1 % of positive *weighting units* (out of 6246) for the opposite sex. If we compare different preference levels more directly, we see more clearly what this means. Thus, for example, of the 548 first choices, only 0.4 % are intersexual, whilst of the 545 second choices 3.7 %, of the 545 third choices 5.8 %, and of the 1329 low-level choices (fourth choices, etc.) 9.9 % affect the opposite sex. Employing the individual-directed approach described above, we obtain the following $P$-values: first choices *v.* second choices $<.01$, first choices *v.* third choices $<.001$, and first choices *v.* low-level choices $<.001$.

*The relative occurrence of intersexual choices from boys to girls and from girls to boys.* In our brief survey above covering the general occurrence of intersexual choices, we could perhaps find some signs of sex differences as to sex cleavage, and a percentage calculation confirms this impression. As against 4.9 % intersexual choices (out of 1427) from boys, we find 7.3 % intersexual choices (out of 1540) from girls. On grade levels 6—8, where the greatest number of intersexual choices are found (cf. below), we find 6.7 % intersexual choices (out of 640) from boys, and 11.7 % (out of 709) from girls. When considering the number of individuals in the different categories, we find no significant difference for the total sample, but a significant difference ($P<.05$) for grades 6—8.

*The relative occurrence of intersexual choices at different grade levels.* The occurrence of positive choices between the sexes increases successively with higher grade levels both for boys and girls. The boys gave 2.6 % of their 462 workmate choices to the girls in grades 3—4, 3.7 % (out of 591) in grades 5—6, and 9.6 % (out of 374) in grades 7—8. The corresponding series of percentages for the girls was: 2.8 % (out of 636) in grades 3—4, 6.8 % (out of 457) in grades 5—6, and 14.3 % (out of 447) in grades 7—8. The total number of intersexual choices in the recess companion aspect was 0 % (out of 302) in grades 3—4, 1.5 % (out of 271) in grades 5—6, and 7.2 % (out of 250) in grades 7—8. The corresponding series of percentages for the friendship reports was: 0.5 % (out of 551) in grades 3—4, 1.3 % (out of 534) in grades 5—6, and 2.3 % (out of 394) in grades 7—8. Even if the differences are not always great, they all tend in the same direction.

However, if we split the population in the *MF* Classes and the *AB* Classes, we find that the development just demonstrated which tends towards a higher number of positive intersexual choices on the higher grade levels is clear only in the latter class series (cf. Table 5.33).

Whereas the *AB* Classes show 3.6 % intersexual workmate choices (out of 660) in grades 3—4 as against 17.6 % (out of 528) in grades 7—8, corresponding figures for the *MF* Classes are 1.4 % (out of 438) as against 2.4 % (out of 293). Estimating *P*-values from the distribution of individuals giving choices to the opposite sex and individuals giving choices to the same sex only, we find that the differences between grades 3—4 and grades 7—8 are highly significant ($P < .001$) for the *AB* Classes, but not significant ($P > .3$) for the *MF* Classes.

## 2. Discussion

When discussing these results, the first question is whether the findings could be studied disregarding the proportional number of boys and girls. The probability of being chosen by a member of the opposite sex by chance is of course not quite the same in the different classes. However, when dealing with most of the problems discussed above (formalized *v.* more personal preference aspects, positive *v.* negative choice situations, first choices *v.* lower level preferences), comparisons between different classes or sexes are not intended, and the sex proportion is thus not immediately relevant in these cases. In some problems (boys *v.* girls as choice-senders, younger *v.* older children), the sex proportion is more likely to have an influence on the results. However, when comparing the intersexual choice data with the sex proportions as given above in Table 4.1, we cannot find any clear differences which are likely to affect systematically the conclusions reached above. In most classes the sexes are fairly equally balanced: the difference between the number of boys and girls is usually 2 or 3, and in the three classes where the difference exceeds 5, we find no exceptional results in intersexual choosing. In this connection we may cite Bonney's similar finding: "Although it might seem that the extent of choosing between the sexes would be materially affected by proportional representation of each sex in a particular room, this did not prove to be true" (1954, p. 110).

The markedly low occurrence of intersexual choosing in general is in complete agreement with most earlier investigations at comparable age levels (Moreno refers to the age 8—13 years as "a first homosexual cycle"; 1953, p. 700). We have certain justification in speaking about a veritable "sex barrier" in all the preference aspects and at all the age levels considered. Whether the teacher accepts the sex cleavage or considers it to be an educational aim to work against it, he has to be conscious of its very obvious reality.

If the teacher wants to counteract it, is there any way in which he can do so, that is, is the sex cleavage among school children mainly determined by factors which are resistant to educational environment or not? This is an intricate problem, which cannot be dealt with in detail here, but we shall emphasize a few of the findings, which at least show that the intersexual resistance is not absolute, but changes according to the situation analyzed. Such changes are seen for example when comparing different preference aspects: the contacts across sex boundaries tend to become easier when moving from the more personal to the more formalized aspects. From an educational point of view, it is of course of interest to observe that intersexual choosing is easier in the less intimate work area. If it is considered an educational aim to work against sex barriers, the teacher may, for example, start with attempts at "familiarizing" in relatively formalized situations in which the initial resistance will probably be lower than otherwise.

It is obvious that the popular idea of a sex barrier is that the pupils not only prefer interaction with classmates of their own sex, but also actively reject members of the opposite sex. That the number of negative intersexual choices, then, is not higher than it is (which could be expected starting from this view) may be due to two quite different causes. In some cases the sex barrier is probably so "self-evident" to the pupils that they simply do not reflect on the possibility of choosing a pupil of the opposite sex and therefore do not reject this possibility either. In other cases the cause may be the fact mentioned above that the sex barrier is relative rather than absolute, that is, the pupils have no fundamental aversion against working with pupils of the opposite sex, but they simply prefer to place individuals of the same sex highest on the preference list. Both interpretations seem reasonable against the background of the written preference motivations and the oral comments of the pupils after the choice situation. To a certain degree the last mentioned interpretation replaces the picture of an inescapable barrier with the less dramatic picture of in-category preference. If this view is correct in a sufficient number of cases, we should expect that intersexual choices as a rule lie on lower preference levels than the intrasexual ones. This was shown above to be the case. In this connection we should like to cite a few sentences from G. W. ALLPORT. "We prefer the familiar. . . . Attitudes partial to the in-group . . . do not necessarily require that attitudes towards other groups be antagonistic — even though hostility often helps to intensify the in-group cohesion. Narrow circles can, without conflict, be supplemented by larger circles of loyalty. This happy condition is not often achieved, but it remains from the psychological point of view a hopeful possibility." (1954, p. 46).

The finding that the development towards a higher number of intersexual choices in the higher grades is very clear in the *AB* Classes, but not so in the *MF* Classes, is interesting, since this fact makes it probable that we are not only dealing with an unchangeable development but that the educational environment may be of importance. It is not at all impossible that a certain lifting of the sex barrier has been the result of contacts in the free group work (the *AB* Classes having experience of regular group work, and the *MF* Classes not).

In conclusion, then, the degree of sex cleavage in the present investigations is important in all mixed classes. However, it is not absolute, and it tends to vary: (a) Directly with an increase in the degree of intimacy of the preference aspect: the lowest cleavage is found when using formalized aspects. (b) Directly with an increase in the degree of intensity of the positive choice: lower cleavage is obtained with low-level positive preferences than with high-level preferences. (c) Inversely with an increase in age: lower cleavage is found among the older children. (d) Inversely with an increase in contacts during school work: lower cleavage is found among the children with experience of group work. In addition, girls tend to be less resistant to intersexual contacts than boys.

CHAPTER 6

# THE SPECIFICITY OF THE PREFERENCE SITUATION

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In the present chapter our task is to discuss three assumptions concerning the specificity of sociopreferential status scores (cf. the introduction). To what degree are results from our choice situation limited to the method of preference (simple choices, unlimited in the upward direction), to the choice aspect (choices of workmates), and, finally, to the specific test moment? Or conversely, to what degree are "homogeneous" generalizations (testdistal "translations" or predictions within the sociopreferential area) possible and admissible? We will take one problem at a time.

## I. THE SPECIFICITY OF THE PREFERENCE METHOD

As mentioned above (chap. 2), there is an obvious need for further comparative research on different preference methods, since the investigations so far made are few in number, often deal with only two methods, sometimes neglect to keep choice aspects constant, and sometimes employ rather specific populations. In this section we intend to describe a comparison on a small scale between five different preference methods while keeping preference aspects constant. Our primary aim is to give some information about the degree to which the preference methods used in most of the present investigations and utilized below for extrasociopreferential comparisons differ from other possible methods for analysis of interpersonal preferences.

### 1. Data Collection

The methods employed in the present comparisons might be called preliminarily:

(a) "*the method of simple choice*" (or more specifically: "the method of floor limit choice", i. e., choices unlimited in the upward direction; Method 1);

(b) "*the method of pair comparisons*" (Method *A*);

(c) "*the method of total rank order*" (Method *B*);

(d) "*rating-scale method I*" (Method *C*);

(e) "*rating-scale method II*" (Method *D*).

The common aspect was workmate preferences (the main aspect in the total series of investigations). The different techniques employed might be described in more detail as follows:

(a) *The method of simple choice* (Method 1): This technique corresponds to that used throughout all our sociopreferential investigations with the workmate aspect; the questionnaire was identical with "Questionnaire I" demonstrated above (chap. 4), and the instructions were given in the same words.

(b) *The method of pair comparisons* (Method *A*): Every pupil's name was paired with every other pupil's name, resulting in a list of $n(n-1)/2$ pairs (which means 435 pairs in a class of 30 pupils). All pupils in the class received such lists, and the following instructions were given: "Here are the names of your classmates. They are paired in various ways. Look at one pair at a time. Underline the name of the classmate that you would most like to have as a workmate from those two. If, for instance, you have to choose between Andersson and Pettersson, and if then you would most like to have Pettersson as your workmate, you thus underline the name like this: Andersson — Pettersson. You cross out the pairs in which your own name is included".

(c) *The method of total rank order* (Method *B*): Every pupil received a list of his classmates, and the following instructions were given: "Mark the names with numbers. Place a figure one after the classmate you would *like most* to have as your workmate, a figure two after the one you would *like next most* to have as your workmate, etc. In this way mark all the names except your own with numbers".

(d) *Rating-scale method I* (Method *C*): Every pupil received a list of his classmates. Each name was followed by the sequence ++ + ? — ——. The instruction was phrased thus: "Which classmates do you think you want as workmates? Draw a ring around ++ for those you accept *most willingly*, and a ring around + for those you accept *fairly willingly*. Draw a ring around —— for those you would accept *most unwillingly*, and a ring around — for those you would accept *fairly unwillingly*. Draw a ring around ?, if you do not know how you feel about that classmate".

(e) *Rating-scale method II* (Method *D*): Our fifth method was a rating-scale constructed somewhat differently, and having certain similarities with BOGARDUS' distance scale (cf. discussion above, chap. 2). In this case too, every pupil received a list of his classmates. On the blackboard the following alternatives were written: "1. Could be a member of a two-pupil work group to which I belong. 2. Could be a member of a four-pupil work group to which I belong (but not in a two-pupil work group). 3. Could be a member of a larger work section with 10—15 pupils to which I belong (but not in a work group with 2—4 pupils). 4. Could be a member of our class (but not in my work group or my work section). 5. Should rather be out of our class". The pupils were instructed to mark each name with a number, viz., the number referring to the statement which the subject thought most appropriate to the pupil in question.

These investigations were made during the autumn term 1953 in one girls' class called *U* here, and one boys' class called *V* here (both from the Swedish grade 5; cf. Table 4.2 above). The five methods were introduced in the following order: (1) the method of simple choice, (2) the method of pair comparisons (two weeks later), (3) the method of total rank and rating-scale method I (two weeks later, at the same time), and (4) rating scale method II (two weeks later).

## 2. Data Analysis

### A. *Numerical operations*

Data from the method of simple choice were treated in the same way as they have been elsewhere in these investigations. Positive choices received, in which the levels of preference were weighted, were utilized as the basis for comparison. Status values from the method of pair comparisons were obtained by adding together the number of underlinings received. Similarly, status values from the total rank order were obtained by adding the rank positions received, and from the second rating-scale by adding the numbers (1—5) received. In the first rating-scale the symbol scale ++ + ? — —— was translated into the numeral scale +2, +1, 0, —1, —2, after which these values were added together (the signs being respected). Numerically high value in the simple choice situation, the pair comparisons, and the first rating-scale meant a high degree of positive preference, whilst numerically high value in the total rank order and in the second rating-scale meant a low degree of positive preference. This purely number-technical lack of correspondence was corrected in correlating, so that positive correlation always subsequently means correspondence in the degree of "acceptance".

### B. *Results from the general inter-methodological comparisons*

Our main question is: are the status values of the individuals calculated from these different methods tolerably similar or are they not? If they are similar, sociopreferential status may be regarded as fairly independent of the measurement technique employed; if they are not, it must be more specifically dependent on method. For practical reasons it would not have been wise to employ all the five preferential methods on the same occasion,

Table 6.1. Correlations ($r$) between Ordinary Status Scores and Status Scores according to the *A*, *B*, *C*, and *D* Methods

| | Class *U* (*N* 28) | Class *V* (*N* 30) |
|---|---|---|
| Method *A* | .83 | .75 |
| Method *B* | .85 | .65 |
| Method *C* | .79 | .70 |
| Method *D* | .87 | .37 |

Table 6.2. Intercorrelations ($r$) between Status Scores according to the *A*, *B*, *C*, and *D* Methods

| | Class | Method *A* | Method *B* | Method *C* |
|---|---|---|---|---|
| Method *B* | *U* | .94 | — | — |
| | *V* | .94 | — | — |
| Method *C* | *U* | .95 | .95 | — |
| | *V* | .91 | .91 | — |
| Method *D* | *U* | .92 | .93 | .93 |
| | *V* | .29 | .70 | .26 |

which would probably have bored the subjects and made their reactions more careless. Some decrease in correlation may therefore be due to "real" instabilities in preference. However, these displacements with respect to status cannot be expected to be great in such short periods of time (cf. the stability investigations below).

### a. *Data survey*

Table 6.1 shows the correlations between our usual status scores (from the simple "floor limit" choice) and status scores according to methods *A*, *B*, *C*, and *D*. In all cases the correlations are positive, and — with one exception — moderately high: .65 — .87.

Table 6.2 shows intercorrelations between status values according to methods *A*, *B*, *C*, and *D*. These coefficients are high in nearly every case (all above .90 except correlations with method *D* in class *V*). Methods *A—D* are thus related to each other somewhat more closely than they are to our main method 1.

### b. *Discussion*

Although in Table 6.1 the correspondence between the different techniques is some way from being one-to-one, nevertheless sociopreferential status seems to be fairly independent of the preference method. Thus, we have no reason to assume that results gained with the primary technique employed in most of the present investigations will be fundamentally different from results found with other methods.

A more concrete picture of the relative consistency of status scores calculated on the basis of different methods is given in Figure 6.1. The four most chosen pupils, the four least chosen pupils, and three middle-status pupils, according to the method of simple choice, were picked out from class *U*, and their positions as to status ranks were depicted for each of the other four methods. Although there are several *small* changes in rank (so that, for instance, two "adjacent" high-status pupils change places), nevertheless the three categories of pupils picked out never mix with each other in the diagram. Thus, an individual who is classified as belonging to the high-status level from the method of simple choice does not change into a low-status position when classified by one of the other methods used here, and, analogously, a pupil characterized as holding a low-status rank when applying the first method is not suddenly seen as holding a high-status rank when we employ the other methods.

The data in Table 6.2 showed that status values from method *A*—*C* are somewhat more similar to each other than they are to method 1. What can be the cause for this similarity? Probably, the fact that the subjects in methods *A*—*C* are forced to disclose their attitudes to all the pupils of the class, whilst this is not the case with the simple choice situation (we must also remember that negative choices have *not* been taken into consideration in the status scores of method 1 in the present comparison). We can often assume that the pupils have some kind of graduated attitudinal reaction also to those classmates who in the ordinary sociopreferential situation are only referred to as receiving "indifferences". It may sometimes be desirable, therefore, to employ one of these other methods. The results of method *D* follow the results of the other methods in class *U*, but not in class *V*, which may possibly have something to do with sex differences with respect to negative choice questions. Of the others, that is, of *A*, *B*, and *C*, which method is to be preferred? As the results are quite similar, either the total rank order or the first rating-scale method could be recommended. The remaining method (pair comparisons) is very exact, it is true, but it is also incomparably more

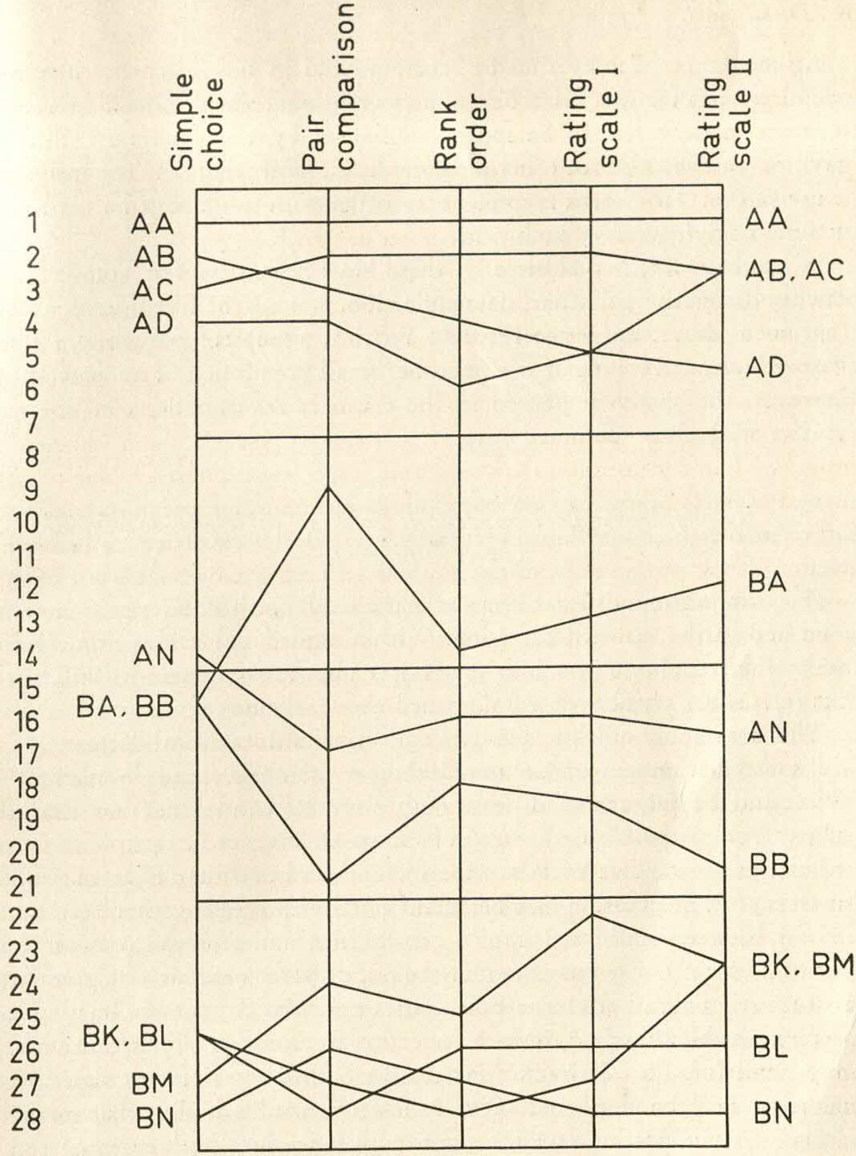


Fig. 6.1. Status rank on the basis of five different preference methods (Class *U*: four high-status, four low-status, and three middle-status individuals).

time-consuming and tiring for the subjects (besides which the scoring takes much more time). However, even if the total rank order and the first rating-scale method may thus be recommended in several cases, there are several reasons for not discarding the conventional simple choice methods: these are usually felt to be more meaningful by the subjects, and they may be employed also for other purposes (e. g., measuring the "expansivity" of the subject). Different methods may often with advantage be used side by side, complementing each other.

As has been mentioned already, there have been very few comparisons between different methods of data collection. Among the five investigations mentioned above, only one (ENG & FRENCH 1948) compares more than two methods, and this deals with a rather small population of adult women. However, the results presented in those earlier investigations in no way conflict with those obtained here.

### C. *Results from the comparisons between different degrees of choice limitation*

The comparisons discussed so far have dealt with choices which were unlimited in the upward direction. Within traditional preferential sociometry, limited choice possibilities are just about as common as unlimited ones (cf. Table 2.3 above). As discussed above, the advantages of *k*-choice requests are mainly quickness in data collection and statistical data analysis, whilst the advantages of unlimited choices are their naturalness for the subject and the richer possibilities of multi-perspective analysis (since analysis of "expansion" and "isolation" will be more or less meaningless when using *k*-choice requests). But what are the differences in results of status scores? Answers to that question can be found partly by means of a direct comparison between unlimited choice possibilities and *k*-choice request (cf. ENG & FRENCH 1948, JOHANNESSON 1954), partly by means of a comparison between unlimited choice possibilities or *k*-choice requests on the one hand and a third method of data collection as an external criterion on the other hand (cf. ENG & FRENCH 1948). In both cases different degrees of limitation may be employed (ENG & FRENCH used 2 and 5 choice possibilities, JOHANNESSON 3). In the present investigations both types of comparisons were made, and, in addition, more degrees of limitations were studied than was done in the earlier investigations mentioned (5, 4, 3, 2, and 1). In all cases correlations were calculated both on the basis of status scores made up of non-weighted preferences and status scores made up of weighted preferences.

Table 6.3. Correlations ($r$) between Status Scores Based on Test-Situations with Unlimited Choice Possibilities and Status Scores Based on Different Degrees of Post-Experimental Choice Limitation

| Choice possibilities | Weighted choices | | Unweighted choices | |
|---|---|---|---|---|
| | Class *U* ($N$ 28) | Class *V* ($N$ 30) | Class *U* ($N$ 28) | Class *V* ($N$ 30) |
| 5 choices | .987 | .992 | .93 | .97 |
| 4 choices | .986 | .985 | .93 | .94 |
| 3 choices | .96 | .97 | .97 | .96 |
| 2 choices | .92 | .95 | .94 | .93 |
| 1 choice | .77 | .78 | .76 | .79 |

### a. *Data survey*

The results of the comparison between status values based on choice possibilities which were unlimited in the upward direction and status values based on different degrees of choice limitation are shown for the classes *U* and *V* in Table 6.3. We notice (a) that even with the most extreme choice limitation — limitation to one choice — we still obtain considerable similarity in status, with correlations above .75; (b) that this similarity is on the whole more accentuated when the number of choices is augmented, which, of course, is fairly obvious; (c) that the difference between weighted and non-weighted choices is not very great, even if, as we may guess *a priori*, the approximation to status values based on unlimited choices is somewhat greater when using weighting; and, finally, (d) that as great a limitation as only two choices seems possible without fundamentally altering the status rank order within the class (the lowest coefficient of correlation being .92).

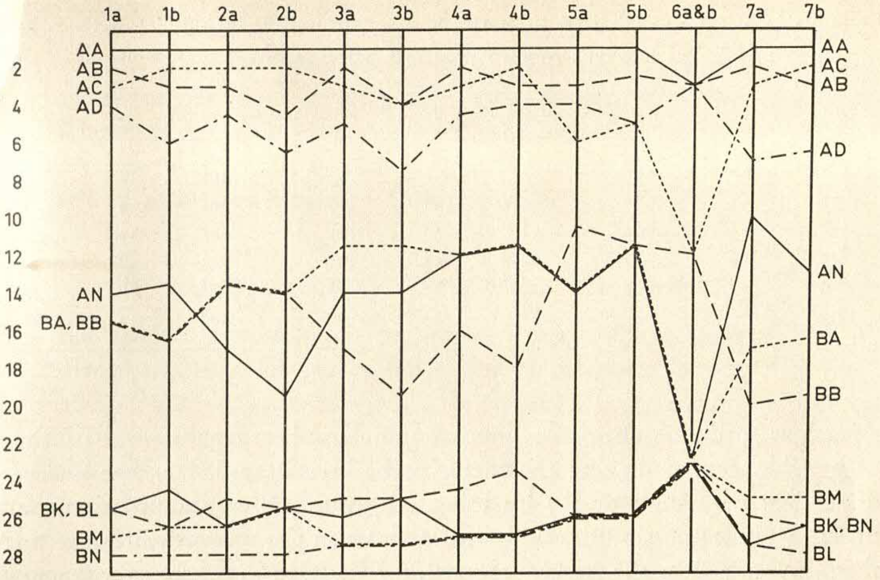
The status values that the pupils received in paired comparisons, rank order and the two rating-scale methods were translated into standard scores and added together (a procedure which seemed defendable in view of the generally fairly high correlations). The status scores based on the limited and unlimited situations were then compared with this standard score combination of methods *A—D*, which then had the function of criterion variable. That the correlations between *k*-choice requests and unlimited choices should decrease when the limitation was further narrowed, is of course relatively obvious when using direct comparison. In this connection a comparison with a criterion variable is then in a way more interesting. Table 6.4 shows: (a) that in every case the coefficients

Table 6.4. Correlations ($r$) between Status Scores according to the *ABCD* Methods and Ordinary Status Scores Based on Different Degrees of Post-Experimental Choice Limitation

| Choice possibilities | Weighted choices | | Unweighted choices | |
|---|---|---|---|---|
| | Class *U* (*N* 28) | Class *V* (*N* 30) | Class *U* (*N* 28) | Class *V* (*N* 30) |
| Unlimited | .85 | .77 | .86 | .80 |
| 5 choices | .80 | .76 | .79 | .75 |
| 4 choices | .80 | .77 | .78 | .78 |
| 3 choices | .79 | .72 | .80 | .69 |
| 2 choices | .75 | .70 | .75 | .68 |
| 1 choice | .60 | .60 | .59 | .61 |

of correlations are somewhat lower in this second type of comparison than in the first type of comparison; (b) that it is nevertheless striking that even status scores based on so extreme a limitation as one choice show a positive correlation of about .60 with the *ABCD*-scores, which, among other things, start from methods as exact as pair comparisons and the total rank order; (c) that status scores based on unlimited choices show a better correspondence with these more exact methods than status scores based on the extremely limited choice possibilities.

A more concrete picture of the relative consistency of the status scores calculated on the basis of different degrees of post-experimental limitation is given in Figure 6.2. The same pupils as were used for illustrative purposes in Figure 6.1 are also used in this case, where no less than fourteen kinds of status score are compared. Although there are several small changes in rank so that "adjacent" individuals change places or "coincide", nevertheless the three categories of pupils picked out mix with each other only at *one* point in the diagram, viz. when the rather extreme one-choice limit is applied (6). And even in this extreme case there is no confusion between high-status and low-status individuals. In Figure 6.1 above, *AA* had exactly the same rank all through; this is also the case in the present diagram with only one exception. The two last columns in the diagram show status ranks when using combined status variables: number of positive choices received minus number of negative choices received ($\bar{p}—\bar{n}$). No important changes are introduced by this method in the present case. Table 6.5 shows also positive and very high correlations between status scores based on $\bar{p}$ and status scores based on $\bar{p}—\bar{n}$ (cf. JOHANNESSON 1954, p. 105). In classes where very few rejections are given



*Key:* 1 = Unlimited choice possibilities
2 = 5-choice limit
3 = 4-choice limit
4 = 3-choice limit
5 = 2-choice limit
6 = 1-choice limit
7 = Number of positive choices minus number of negative choices ($\overline{p}-\overline{n}$)
a = Weighted choices: choice values received (a first positive choice was given a value of 4, a second positive choice a value of 3, a third positive choice a value of 2, all other positive choices a value of 1, and a negative choice, in the combined variable, a value of -4)
b = Unweighted choices: the number of choices received

Fig. 6.2. Status rank on the basis of different degrees of choice limitation, weighted *v.* unweighted choices, and simple *v.* combined status variables. (Class *U*: the same individuals as in Fig. 6.1)

this is rather self-evident (no coefficient is given for class 8m, as only one negative choice is given in this class), but also on the basis of the negative correlations between $\overline{p}$ and $\overline{n}$ (cf. chap. 5: III), we should expect scores based on $\overline{p}$ and scores based on $\overline{p}-\overline{n}$ to be similar.

### b. *Discussion*

On the whole, there seem to be two different ways of comparing various degrees of choice limitation: either (a) by using a retest series of preference

Table 6.5. Correlation ($r$) between Positive Choices Received and Positive Choices Received Minus Negative Choices Received ($\overline{p}$ v. $\overline{p}$-$\overline{n}$)

| Class | $N$ | $r$ | Class | $N$ | $r$ | Class | $N$ | |
|---|---|---|---|---|---|---|---|---|
| 3m | 27 | .89 | 3f | 30 | .97 | 3mf | 38 | .93 |
| 4m | 34 | .95 | 4f | 35 | .95 | 4mf | 34 | .95 |
| 5m | 23 | .90 | 5f | 26 | .95 | 5mf | 32 | .93 |
| 6m | 26 | .96 | 6f | 25 | .95 | 6mf | 37 | .95 |
| 7m | 26 | .998 | 7f | 25 | .88 | 7mf | 30 | .97 |
| 8m | — | — | 8f | 23 | .96 | 8mf | 24 | .84 |

situations, utilizing the same population in as short an interval of time as possible, but modifying the factor to be investigated, i. e., the number of choices requested; or (b) by using only one preference situation, and utilizing choice possibilities unlimited at least in the upward direction and then investigating the result of choice limitation by *post-experimental* manipulations of data. The primary advantage of the first method is that here we can study directly the primary reaction of the subjects to different kinds of choice limitation; it is, of course, uncertain whether the subjects would, for instance, retain the first three names given in the unlimited choice situation if they were placed immediately before a forced 3-choice request. The primary advantage of the second method is that no other factors are allowed to influence the process, as may be the case during a series of retests. This latter reason seemed most important to the present writer. Moreover, the risk that the subjects, when forced to limit their choices, would not retain the names which they gave first in the unlimited choice situation, seems fairly small *when a preference ranking is asked for*, as was the case here (cf., below, the different stability of different preference levels). Because of these reasons, the post-experimental procedure was chosen for the present comparisons (then the possibility of comparing the present results with those of ENG & FRENCH 1948 and JOHANNESSON 1954 also exists). A further task for research, however, may be to compare the post-experimental approach used here with an approach using a series of retests with changing degrees of choice limitation.

In conclusion, the fact that status scores founded on extreme limitations of choice possibilities show a lower degree of correspondence with the most exact methods than status scores founded on choice possibilities unlimited in the upward direction, speaks clearly in favor of the latter method (also describable as "floor limit" choices). That this method is advantageous also for other kinds of analysis, has contributed to our choosing it for our main investigations. Nevertheless, it is also clear that the differences between our unlimited and moderately limited choice situations are very small, so that such a limitation for certain purposes may be said to be a satisfactory approximation.

## II. THE SPECIFICITY OF THE PREFERENCE ASPECT

In the general discussion on preference aspects above (chap. 2: V) it was pointed out that the perceptual frame of reference is very different for various individuals even when a fairly specific preference aspect is defined by the experimenter, if only because of the facts that frequently the choice object cannot be evaluated "dispassionately" due to a general attitude of approval or disapproval, and that the chooser not only estimates the chosen's suitability in general, but his suitability to interact with the chooser and with no one else. To change our viewpoint slightly, we may now ask: to what extent do the generalization of preferences and the relation to the chooser cause choices to remain unchanged, *in spite of* the fact that the choice aspect is changed. Or, to express it in another way: to how great a degree do the factors that create intra-aspectual dissimilarities, also contribute to inter-aspectual similarities? To begin with, it may be of interest to formulate the question thus: to what extent do we find similarities between different choice aspects, and to what extent do we find differences? The greater the similarities, the less aspect-bound the sociopreferential differentiation and the greater the possibility of generalization (translation, prediction).

### 1. Semantic Differentiation: An Illustration

In European research a series of investigations has been made on the "ability" of children and adolescents to distinguish between terms for different kinds of positive relations (German: *Freund* v. *Kamerad*, Swedish: *vän* v. *kamrat*; cf., e. g., VEČERKA 1926, KOSKENNIEMI 1936, JOHANNESSON 1954). Etymologically the term "Kamerad" ("kamrat") refers to individuals having a common interest in something external (individuals who share a lodging, "camara"; cf. "fellow" for individuals sharing property, "fé"), whereas the term "Freund" ("vän") refers to a more generally positive emotional relation (cf. "freundlich", "vänlig"). The most common difference as experienced by adults in the German and Swedish language-systems seems to be between "Freundschaft" ("vänskap") as a more personal (intimate) positive relation and "Kameradschaft" ("kamratskap") as a less personal, more object-related positive relation.[1] In the subsequent discussion we will, for convenience, use the English words "friend(ship)" and "comrade(ship)" (which of course have a similar etymological background), but it must be remembered that the investigation to be reported did not deal with the English terms but with the corresponding Swedish words "vän(skap)" and "kamrat(skap)".

Such an investigation of the "ability" of individuals to distinguish between two relational terms may have different aims: (a) to explore linguistic habits; (b) to examine whether words utilized in a sociopreferential situation are perceived differently by different groups of subjects; (c) to inquire whether there may be found any parallelism between conceptual and sociopreferential differentiation. These aims seem legitimate. However, due to the reader's not realizing the conventional nature of language, these investigations have sometimes been used also as a basis for statements about emotional development, so that the term has thus been identified with what it represents in the vocabulary of the investigator or the reader. The fact that children do not use the language in the same way as a certain investigator, cannot of course be utilized as proof that a certain kind of interpersonal relation does not exist among children.[2]

However, since friendship reports have been used as a complementary preference aspect in the present investigations, an investigation and explanation of children's differentiation between "friend" and "comrade" may not be without value in this connection. Such an investigation may moreover be of independent interest, as the largest investigation and the one covering the widest range of ages (VEČERKA's) only dealt with girls.

[1] Cf., for example, the scale used by MAISONNEUVE (1954, p. 34): "very close friendship, strong friendship, strong camaraderie, mere camaraderie", where "very close friendship" was scored 4 and "mere camaraderie" 1 in establishing an "intensity index" for mutual relations. — KOSKENNIEMI's definition of "Kameradschaft" ("comradeship") as "eine auf den Schulbereich beschränkte positive Beziehung" (1936, p. 31), seems to be somewhat too specific to correspond to conventional usage.

[2] For example, the fact that children often do not differentiate between "friend" and "comrade", can neither (per se) be interpreted to mean that the phenomenon "friendship" is developed later then the phenomenon "comradeship", nor to mean that the phenomena "comradeship" and "friendship" are only differentiated late in the development. From a purely logical point of view (that is, disregarding what we know about emotional development from other sources), it is just as possible, that children within a specific language area use both terms to refer to the same kind of relation: and this may then be the sort of relation which the adult research worker would call "friend" or the sort of relation he would call "comrade" or, finally, something wholly different..

Table 6.6. Semantic Differentiation and Age Level
"Vän" ("friend") *v.* "Kamrat" ("comrade")
(*AB* Classes)

| Class | Total number of answers | Yes | | No | |
|---|---|---|---|---|---|
| | | *N* | % | *N* | % |
| 3a | 28 | 25 | 89 | 3 | 11 |
| 3b | 22 | 17 | 77 | 5 | 23 |
| 4a | 22 | 20 | 91 | 2 | 9 |
| 4b | 22 | 17 | 77 | 5 | 23 |
| 3—4 | 94 | 79 | *84.0* | 15 | *16.0* |
| 5a | 26 | 16 | 61 | 10 | 39 |
| 5b | 26 | 19 | 73 | 7 | 27 |
| 6a | 23 | 17 | 74 | 6 | 26 |
| 6b | 28 | 24 | 86 | 4 | 14 |
| 5—6 | 103 | 76 | *73.8* | 27 | *26.2* |
| 7a | 22 | 14 | 64 | 8 | 36 |
| 7b | 22 | 11 | 50 | 11 | 50 |
| 8a | 22 | 14 | 64 | 8 | 36 |
| 8b | 13 | 7 | 54 | 6 | 46 |
| 7—8 | 79 | 46 | *58.2* | 33 | *41.8* |
| Total | 276 | 201 | *72.8* | 75 | *27.2* |

Thus, in the *AB* Classes the following question — formulated in direct connection with certain earlier investigations (cf. discussion below) — was given after Questionnaire I: "Are 'friend' and 'comrade' the same thing? If not, please explain what difference you think there is!"

## A. *Data survey*

Table 6.6 shows the results. In general we find a heavy preponderance of yes-answers, that is, answers which report the opinion that both words refer to the same kind of relation. For the whole sample we find 73 % yes and 27 % no. The direction of the age differences is unequivocal: in the Swedish grades 3—4 only 16 % no are given, as against 26 % in grades 5—6, and 42 % in grades 7—8. (The difference between grades 3—4 on the one hand and 7—8 on the other is highly significant, $P < .001$; the differences between adjacent age stages are somewhat less clear, $P$ .1 and $P$ .04).

The kinds of explanation the children give when they feel that there is a difference between the two words are very varying. Most give the expected reply ("friend" referring to a more intimate relation than "comrade"). Examples: "A friend is awfully nice and a comrade comes next" (grade 3). "You are always together with a friend. You know a comrade, but you don't play so much with him as with a friend" (grade 4). "You talk about nearly everything with a friend, but you would not talk about the same things to a comrade, you are only together with a comrade sometimes" (grade 5). "A friend is someone whom I am much together with and nearly always stick together with. A comrade I call someone I am together with sometimes and in the school, but not a real friend with" (grade 7). "To a friend you entrust secrets, you are together with him in summer-time, but with a comrade you have only school hours and sports in common" (grade 7). Just as interesting is, however, the fact that several explanations say the exact opposite, even among the older children ("comrade" referring to a more intimate relation than "friend"). Examples: "A friend is someone you are together with only sometimes, a comrade is someone you are together with always" (grade 4). "A comrade is someone you always stick together with, but a friend is a boy or girl you are good friends with for the occasion" (grade 6). "A friend is a nice lad (girl), a comrade is the one you are most together with" (grade 7). "You can have several friends with different manners and different tempers. But a comrade is the one you most willingly keep together with" (grade 7). "You can confide in a comrade. A friend is someone you are somewhat acquainted with" (grade 7). "Anyone may be a friend, but a comrade is the one you are together with and confide in" (grade 8).

### B. *Discussion*

If we had aimed at exact knowledge of the yes-no proportion in our sample of individuals, the present formulation of the question would not have been suitable; it is obvious that the pupils are tempted to say yes, since this does not require an explanation. That this phrasing was used, was due to our desire to retain the formulation employed in certain earlier investigations (KOSKENNIEMI 1936, p. 92; JOHANNESSON 1954, p. 144). As our purpose was *not* to get information about exact proportions, but to compare different categories of pupils, the biased question did not seem quite unusable.[3] On the whole, this inter-categorial comparison seemed to disclose clear differences between different age stages. One further problem may be interesting in this connection: do the children with better school marks differentiate more often than children with less good results in school work? Each class was divided into two halves, one half of the pupils having good school marks and the other half of the pupils having less good school marks, after which the distribution of yes and no was investigated in relation to these categories. Among the children with low school marks we found 74 % yes and 26 % no; among the children with high school marks 72 % yes and 28 % no. It seems that general ability as mirrored by the teaching marks did not have any influence in this connection.

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[3] There has also sometimes been used another formulation (cf. VEČERKA 1926, p. 91; JOHANNESSON 1954, p. 145), which seems less biased from the point of view just discussed:

The explanations show that the Swedish "kamrat" ("comrade") is regarded by many school children as having a rather "intimate" character; it is not impossible that we see here a development away from the term "vän" ("friend"), which perhaps has been felt to be too intimate or too literary (and in addition is sometimes used in the meaning of "non-enemy"), whereupon a certain conceptual instability has resulted. This being so, it is not surprising that most pupils do not find any conceptual difference between the two words or in their eager search for one, offer the following: "Friend and comrade are not spelt in the same way" (!). It may be important, however, to remember this conceptual instability when we try to interpret results from friendship reports, even if, of course, the specification "best friends" makes the choice situation somewhat clearer.

## 2. Preferential Differentiation

### A. *Data survey*

To what degree do we find a differentiated choice behavior in the different choice aspects employed in the present investigations?

If we plot choices from one choice aspect on a diagram where the positions of the individuals are determined by choices for another choice aspect, we may gain a first idea of the existence or non-existence of similarities. A series of such comparisons may be made from Figures 6.3—6.6. In Figure 6.3 leader choices in class 3m are given with arrows on the square diagram, type III (cf. Figure 3.5 above and the detailed

"Are friend and comrade the same thing or not? Why?" This question is, however, not quite suitable, since children as a rule — and quite rightly — find the question "Why?" nearly impossible to answer in cases where they are of the opinion that the two terms refer to the same kind of relation and on the whole find it more or less difficult to understand whatever their opinion.

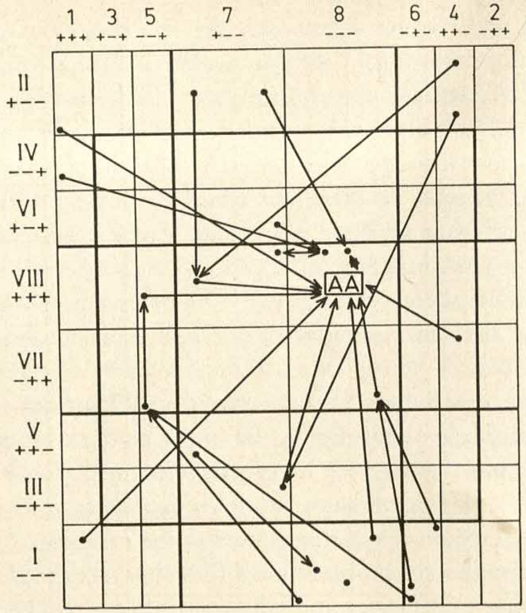

Fig. 6.3. Leader choices *v.* multi-variable position based on workmate choices. (Class 3m)

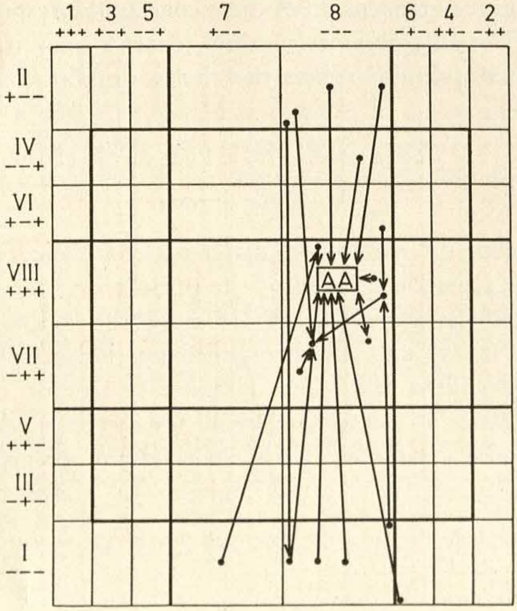

Fig. 6.4. Leader choices *v.* multi-variable position based on workmate choices. (Class 8m)

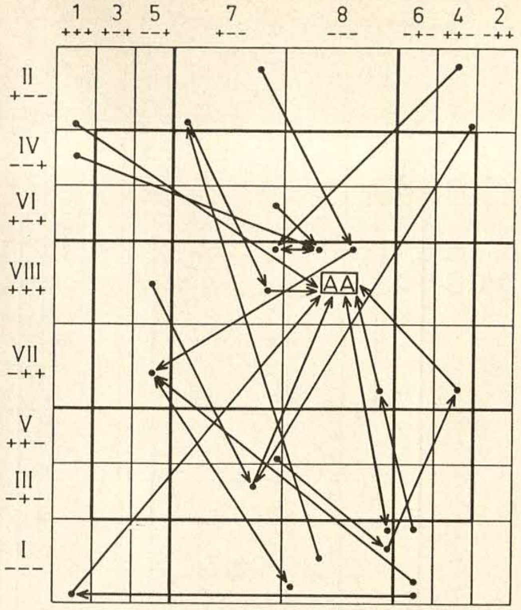

Fig. 6.5. Friendship reports *v.* multi-variable position based on workmate choices. (Class 3m)

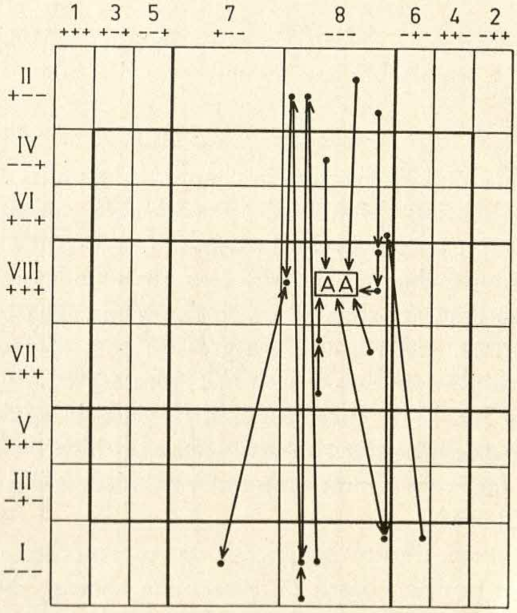

Fig. 6.6. Friendship reports *v.* multi-variable position based on workmate choices. (Class 8m)

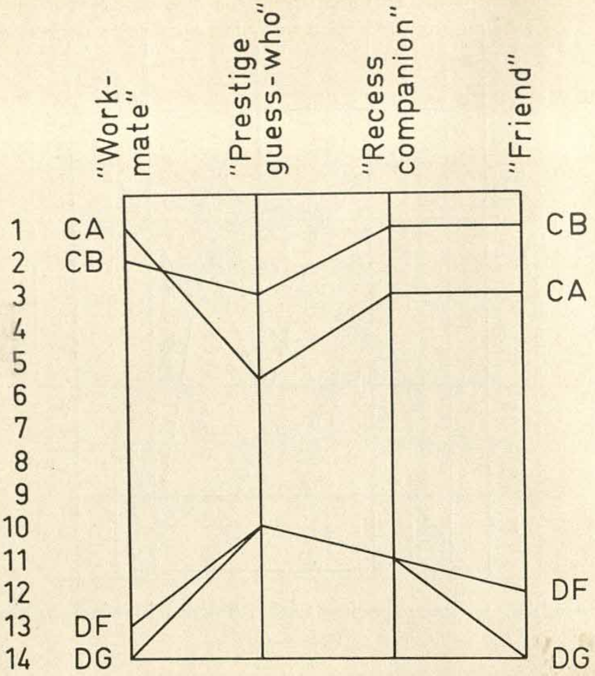

Fig. 6.7. Status rank on the basis of four different choice aspects (the two most chosen and the two least chosen boys in class 3a).

description of this kind of diagram in chap. 3), the multi-variable position of the individuals being determined by workmate choices. We find that the individuals most chosen as workmates are also most chosen as leaders of the work groups, that is, the choice arrows go more often towards the center of the diagram than in other directions. The boy most chosen as a workmate, *AA*, receives also the greatest part of the leader choices. The same general phenomenon is seen in Figure 6.4 which gives analogous data from class 8m. (The conspicuous difference in general distribution on the square diagram between the two classes, which we note in passing, depends on the fact that almost no negative choices are given in class 8m; cf. Table 5.16 above.)

Figures 6.5 and 6.6, illustrating friendship reports (choices of best friend) *v.* multi-variable position based on workmate choices, show that also in this case we find a very clear tendency of the choice arrows to go towards the center of the diagram, that is, the boys most often chosen as workmates

Table 6.7. Interaspectual Differentiation: Correlation between the Number of Choices Received for Two Different Choice Aspects ("Workmate" and "Friend")

| Class | $N$ | $r$ | Class | $N$ | $r$ | Class | $N$ | $r$ |
|---|---|---|---|---|---|---|---|---|
| 3m | 27 | .87 | 5m | 23 | .82 | 7m | 26 | .89 |
| 3f | 30 | .74 | 5f | 26 | .87 | 7f | 25 | .71 |
| 3mf | 38 | .88 | 5mf | 32 | .89 | 7mf | 30 | .58 |
| 3a | 31 | .85 | 5a | 31 | .86 | 7a | 30 | .83 |
| 3b | 28 | .92 | 5b | 32 | .91 | 7b | 29 | .71 |
| 4m | 34 | .89 | 6m | 26 | .86 | 8m | 19 | .75 |
| 4f | 35 | .88 | 6f | 25 | .66 | 8f | 23 | .77 |
| 4mf | 34 | .89 | 6mf | 37 | .84 | 8mf | 24 | .68 |
| 4a | 31 | .72 | 6a | 27 | .74 | 8a | 30 | .81 |
| 4b | 32 | .67 | 6b | 31 | .78 | 8b | 21 | .49 |
| $\bar{r}$ |  | .85 | $\bar{r}$ |  | .84 | $\bar{r}$ |  | .75 |

| Class | $\bar{r}$ |
|---|---|
| 3—5 | .86 |
| 6—8 | .76 |

*Key:* $\bar{r}$ = The mean calculated with the aid of FISHER'S $z$ transformation.

are identical with the boys most often chosen as friends, both in class 3m and in class 8m.

If we pick out the two most chosen and the two least chosen boys in class 3a as we have done in Figure 6.7 and depict their status rank in different choice situations, we find several small changes but a fair degree of general consistency. On a greater scale such comparisons are made in Tables 6.7—6.10. On the whole, we obtain positive and moderately high correlations in the comparisons dealing with status values; these are often, however, somewhat lower among the older children than among the younger ones. Outgoing choice behavior, on the other hand, does not, as a rule, show this clear correspondence between choice aspects (Table 6.10).

### B. *Discussion*

As the instructions forced the subjects to choose leaders among those already chosen as workmates, we should not take the correspondences in

Table 6.8. Interaspectual Differentiation: "Workmate" and "Prestige Guess-Who" (Choices Received)

| Class | *N* | *r* | Class | *N* | *r* | Class | *N* | *r* |
|---|---|---|---|---|---|---|---|---|
| 3m | 27 | .82 | 5m | 23 | .37 | 7m | 26 | .70 |
| 3f | 30 | .78 | 5f | 26 | .88 | 7f | 25 | .75 |
| 3mf | 38 | .78 | 5mf | 32 | .36 | 7mf | 30 | .48 |
| 3a | 31 | .44 | 5a | 31 | .45 | 7a | 30 | .28 |
| 3b | 28 | .67 | 5b | 32 | .58 | 7b | 29 | .08 |
| 4m | 34 | .88 | 6m | 26 | .78 | 8m | 19 | .76 |
| 4f | 35 | .75 | 6f | 25 | .79 | 8f | 23 | .54 |
| 4mf | 34 | .88 | 6mf | 37 | .53 | 8mf | 24 | .44 |
| 4a | 31 | .41 | 6a | 27 | .66 | 8a | 30 | .46 |
| 4b | 32 | .67 | 6b | 31 | .44 | 8b | 21 | —.05 |
| $\bar{r}$ | | .74 | $\bar{r}$ | | .61 | $\bar{r}$ | | .45 |

| Class | $\bar{r}$ |
|---|---|
| 3—5 | .70 |
| 6—8 | .54 |

*Key:* See Table 6.7.

Table 6.9. Interaspectual Differentiation: "Workmate" and "Recess Companion" (Choices Received)

| Class | *N* | Q | *P* |
|---|---|---|---|
| 3a | 31 | .79 | .05 |
| 4a | 31 | .90 | .002 |
| 5a | 31 | .85 | .007 |
| 6a | 27 | .45 | >.3 b |
| 7a | 30 | .95 | <.001 |
| 8a | 30 | .89 | .003 |
| 3b | 28 | .80 | .02 |
| 4b | 32 | .38 | >.3 |
| 5b | 32 | .88 | .005 |
| 6b | 31 | .89 | .003 |
| 7b | 29 | .91 | .002 a |
| 8b | 21 | .45 | >.3 a |

*Note:* See Table 5.25.

Table 6.10. Interaspectual Differentiation: "Workmate" and "Recess Companion" (Choices Made)

| Class | *N* | Q | *P* |
|---|---|---|---|
| 3a | 31 | .64 | .1 |
| 4a | 31 | —.20 | >.3 |
| 5a | 31 | .21 | >.3 b |
| 6a | 27 | .64 | .2 b |
| 7a | 30 | .95 | <.001 |
| 8a | 30 | .22 | >.3 |
| | | | |
| 3b | 28 | —.11 | >.3 a |
| 4b | 32 | .28 | >.3 |
| 5b | 32 | .47 | >.3 |
| 6b | 31 | .60 | .2 |
| 7b | 29 | —.08 | >.3 |
| 8b | 21 | .83 | .05 a |

*Note:* See Table 5.25.

Figures 6.3 and 6.4 too seriously; to *some* extent they are necessary from the type of choice situation. But the instructions allowed the subjects to choose freely among the workmates selected. If it could be shown that leader choices as a rule were given to those who were chosen as workmates in the first place (which could be suspected from the clear tendencies in the diagrams), a more important correspondence would have been found. Table 6.11 shows that this is the case: 62 % of the leader choices correspond to first choices in the workmate selections, 23 % to second choices, and 13 % to third choices. The correspondences between friendship reports and workmate choices in Figures 6.5 and 6.6 are not dependent on instructions and are therefore more easily interpretable.

The exact coefficients of correlation do not perhaps interest us directly, since the choice techniques were not quite identical in the different cases. However, it does not seem too much to state that preferential status seems to be relatively general at this age (9—14 years), so that workmate choices, schoolyard companion choices, and friendship reports give similar status rankings, and that thus it is not quite impossible to "translate" from one preference situation to another. (This is not to say, of course, that the choice aspects used may not be extremely important in certain individual cases or when using more specific choice aspects.) At the same time we perceive a slight, but interesting tendency towards greater differentiation

Table 6.11. Leader Choices and Group Member Preference Level (Totals and Percentages)

| Class | Total number of leader choices | The distribution of leader choices | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1st choices | | 2nd choices | | 3rd choices | | 4th choices, etc. | |
| | | *N* | % | *N* | % | *N* | % | *N* | % |
| *M* | 149 | 98 | 65.8 | 31 | 20.8 | 19 | 12.8 | 1 | 0.7 |
| *F* | 160 | 95 | 59.4 | 42 | 26.3 | 20 | 12.5 | 3 | 1.9 |
| *MF* | 194 | 148 | 76.3 | 29 | 14.9 | 16 | 8.2 | 1 | 0.5 |
| *AB* | 339 | 180 | 53.1 | 95 | 28.0 | 57 | 16.8 | 7 | 2.1 |
| Total | 842 | 521 | *61.9* | 197 | *23.4* | 112 | *13.3* | 12 | *1.4* |

among the older children (just as we found a greater semantic differentiation in the higher grades), so that such generalizations may be said to be somewhat less risky among the younger pupils than among the older ones. The most general picture of this is perhaps given by the comparison between the status values based on the workmate choices and the status values which may be calculated on the basis of Questionnaire III: *B* (which might be called "prestige status"). Whilst the younger children to a great extent report that the children they have chosen as their workmates are also, for example, most cheerful, most polite, least quarrelsome, bravest, or tidiest in the class, this is less often the case with the older children.

## III. THE SPECIFICITY OF THE TESTING TIME

### 1. Introductory Analysis of the Present Approach to the Problem of Intertemporal Consistency

### A. *General principles*

General surveys of empirical investigations of choice consistency have been made, for instance, by Witryol & Thompson (1953 b), by Lindzey & Borgatta (1954), and by Mouton, Blake, & Fruchter (1955 a). At least two general conclusions may be drawn from these studies. Firstly, it is not impossible for group members to make consistent sociopreferential judgments. Most of the reported coefficients of stability for status scores (positive choices received) are above .60, although the correlational range is wide. Secondly, several factors seem to be associated with the specific degree of consistency. Since not all these factors have been subjected to critical experimental analysis, they are often referred to as tentative generalizations or hypotheses rather than facts (cf., e. g., MOUTON, BLAKE, & FRUCHTER 1955 a, p. 45—46).

By way of a general criticism of many investigations of intertemporal choice consistency, it may be remarked that too often the investigators have contented themselves with correlating only — and not seldom with correlating only one variable (usually the number of positive choices received). As this variable may be constant, even if other sociopreferential variables (e. g., the number of negative choices received, the number of positive and negative choices made, the number of positive and negative choices reciprocated) vary, this method is not to be recommended if more general statements about choice consistency are aimed at. And as relational summaries, such as the six basic sociopreferential variables mentioned, may be constant, even though single person-to-person relations are changed, the changes in single choice directions should also be analyzed. In order that an investigation of choice consistency should be as productive as possible, the following procedure should be carried out:

(a) Stability correlations should be elaborated for several different variables. The one-variable analysis is thus expanded into a multi-variable one.

(b) The changes of single person-to-person relations should be analyzed and analyzed in more detail than is usually the case (e. g., by examining separately reciprocated and non-reciprocated choices as well as different preference levels).

(c) Finally, an investigation should be held to determine in what directions the general sociopreferential position of the single individual is changed (preferably with the aid of multi-variable devices).

A stability investigation of this kind would be of greater value with such extended analyses of single choices and single individuals. Firstly, a clearer picture is obtained of what is constant and what is not (the coefficient of correlation is not seldom too compressed a vehicle of communication to be entirely satisfactory in the present connection). Secondly, there is the possibility of also throwing light on the specific character of the changes which have occurred (for example, with the aid of a test-distal frame of interpretation such as the one referred to above in the terminological discussion, chap. 3). In this way we might proceed from the problem "constant—not constant" to the by no means unimportant question of the dynamics of the instabilities. These general principles have guided the present approach in analyzing the temporal specificity of our preferential situations.

B. *Subjects and test-situations: The main (long-interval) experiment*

The main retest investigations to be reported here deal with the *MF* Classes (cf. chap. 4 above). The first test was made in November, 1952, the second in March, 1953, and the third in December, 1953. Between the first and the second test occasion, then, the time interval was four months, between the second and the third nine months, and between the first and the last thirteen months. All three test-situations were employed in the three lower grades (3—5), whilst only the first two were used in the three higher grades (6—8; after the summer vacation the classes from grade 6 and 7 were restructured, and the pupils from grade 8 left school).

In the retest situation, the following instructions were given to the pupils in connection with Questionnaire I: "Some months ago you answered a few questions about which classmates you would most like to choose as your co-workers, if you were allowed to work in small groups. You also explained why you chose just as you did. To-day you will once more have the opportunity to answer these questions. You see, I want to know whether you are of the same opinion now as you were then, or if you have changed your mind. Just like the last time, this is not an examination. Neither your classmates nor your teacher are allowed to look at what you have written. When you have answered all the questions, you are to put the paper in the envelope. I will read the questions aloud to you and explain how you are to write." After having read question *A*, I continued: "Consider carefully who you wish to choose now. Perhaps you wish to choose the same classmates as you chose last time, perhaps you have changed your mind totally or to a certain extent, perhaps you do not remember at all what you wrote earlier. It is all the same whatever the case; only write honestly how you wish to choose just now." The rest of the instructions were given in the same words as in the first test situation.

To the present writer it seems especially important not to omit the literal instructions in research reports dealing with choice consistency (which is very often done), since, if they are omitted, we do not know anything about the kind of presses the group members are subjected to. We should like to emphasize that in the present instructions we explicitly stressed that neither conformity to older choices nor non-conformity was any goal in itself: the choices ought to represent the wishes in the now-situation.

Among the *M* and *F* Classes two classes were followed up with retests (3m and 6f). Since these results have been partly presented earlier

(BJERSTEDT 1952 a, 1953), and since the intervals were slightly different (March 1950, June 1950, March 1951), we will use parts of these data for certain illustrative purposes rather than presenting them fully. The instructions were the same as those given in the *MF* Classes.

### C. *Subjects and test-situations: An additional (short-interval) comparison*

In addition to these main retest investigations making use of rather long temporal intervals, we had the opportunity to make an additional short-interval comparison in the *AB* Classes. In most of these classes a questionnaire prepared by the superintendent had been distributed by the class teachers about two weeks earlier. In this questionnaire, among other things, the following sociopreferential item was included: "Your class is to work in groups in some geography lessons .......... Choose among your classmates three whom you would like to work together with. 1. .......... (most of all), 2. .......... (next most), 3. .......... (next)". The results of this earlier sociopreferential situation were compared with our own results.[4]

## 2. The General Constancy of Relational Summaries (The Basic Sociopreferential Variables)

### A. *Data survey*

Tables 6.12--6.14 give the main results concerning relational summaries. Table 6.12 presents product-moment correlations for the number of positive workmate choices received. The coefficients lie between .72 and .91 for the 4-month interval, between .53 and .84 for the 9-month interval, and between .55 and .83 for the 13-month interval. Table 6.13 gives a survey of stability coefficients for all the six basic sociopreferential variables calculated with the aid of YULE's coefficient of association (Q) together with levels of significance (Q being used because of the short ranges of some of the variables; cf. chap. 5 above). The number of *x*'s (our symbols for degree of significance) within different time intervals and different variables varies considerably. The highest number is seen for the measures pertaining to the 4-month interval, the next highest for the measures pertaining to the 9-month interval, and the lowest for the measures pertaining to the 13-month interval. If we consider the columns instead of the

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[4] I wish to express my gratitude to the superintendent, fil. lic. VINCENT STERNER, who kindly allowed me to use these data.

Table 6.12. The Stability ($r$) of Received Workmate Choices ($\overline{p}$) in the $MF$ Classes

| Class | Interval | $N$ | $r$ |
|---|---|---|---|
| 3mf | 4 months | 37 | .91 |
| 4mf | » | 31 | .82 |
| 5mf | » | 30 | .72 |
| 6mf | » | 35 | .91 |
| 7mf | » | 27 | .85 |
| 8mf | » | 23 | .77 |
| $\bar{r}$ | | | .85 |
| 3mf | 9 months | 34 | .84 |
| 4mf | » | 31 | .79 |
| 5mf | » | 29 | .53 |
| $\bar{r}$ | | | .75 |
| 3mf | 13 months | 33 | .83 |
| 4mf | » | 28 | .80 |
| 5mf | » | 27 | .55 |
| $\bar{r}$ | | | .76 |

*Key:* See Table 6.7.

horizontal fields, we find the highest number for the $\overline{p}$-variable, a somewhat lower number for $\overline{\overline{p}}$ and $\bar{n}$, very few for $p$ and $n$, and none for $\overline{\overline{n}}$.

Finally, Table 6.14 shows correlations ($r$) from the short-interval comparison in the *AB* Classes. With one exception, the coefficients lie between .80 and .91.

A concrete picture of the degree of stability is given by Figures 6.8 and 6.9 illustrating choice status (choices received) in class 3mf at three different test occasions. Figure 6.8 gives status ranks, whilst Figure 6.9 shows status scores (both being based on weighted choices).

### B. *Discussion*

In general, then, we may conclude that we find a fair degree of stability in the number of positive workmate choices received also over relatively long periods of time, that is, during more than a year. For practical educational applications this means that the preferential structure, to the extent that this is mirrored in the choice receptions of the pupils, is

Table 6.13. The Stability of the Basic Sociopreferential Variables
(Q and *P* values in the *MF* Classes)

| Class | Interval | *N* | $p$ |  | $\bar{p}$ |  | $\bar{\bar{p}}$ |  | $n$ |  | $\bar{n}$ |  | $\bar{\bar{n}}$ |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  | Q | *P* | Q | *P* | Q | *P* | Q | *P* | Q | *P* | Q | *P* |
| 3mf | 4 months | 37 | .75 | x | .87 | xx | .76 | x | .18 | — | .66 | oa | .66 | (—)c |
| 4mf | » | 31 | .64 | (—) | .97 | xxx | .78 | x | .52 | (—) | .95 | xxx | .36 | —c |
| 5mf | » | 30 | .13 | — | .93 | xxx | .98 | xxx | .52 | (—) | .82 | x | .75 | (—)c |
| 6mf | » | 35 | .93 | xxx | .88 | xx | .90 | xx | .73 | (—)c | .92 | xxa | † | † |
| 7mf | » | 27 | .71 | o | .96 | xxx | .91 | xxa | .86 | x | .60 | (—)c | .92 | —c |
| 8mf | » | 23 | .77 | ob | .96 | xx | .56 | —c | .68 | (—)a | .09 | —c | † | † |
| *M* |  |  | .66 |  | .93 |  | .82 |  | .58 |  | .67 |  | .67 |  |
| 3mf | 9 months | 34 | .69 | o | .83 | xx | .60 | (—) | .34 | — | .63 | (—) | .50 | —c |
| 4mf | » | 31 | .66 | (—) | .89 | xx | .96 | xxx | .31 | — | .63 | (—) | .21 | —b |
| 5mf | » | 29 | .07 | — | .88 | xa | .81 | xc | .11 | — | .93 | xx | .83 | oc |
| *M* |  |  | .43 |  | .87 |  | .79 |  | .25 |  | .73 |  | .51 |  |
| 3mf | 13 months | 33 | .51 | (—) | .87 | xx | .78 | x | .60 | (—) | .89 | xx | .56 | —c |
| 4mf | » | 28 | .84 | oc | .96 | xxx | .80 | x | −.13 | — | .54 | (—) | .02 | —c |
| 5mf | » | 27 | .22 | — | .55 | (—)a | .76 | (—)c | .33 | —a | .59 | (—)a | .74 | (—)c |
| *M* |  |  | .52 |  | .79 |  | .78 |  | .27 |  | .67 |  | .44 |  |

† comparison cannot be made
For the meaning of *a*, *b*, and *c*, see Table 5.25.

*Key:* xxx = $P \leq .0010$
xx = *P* .0011 — .010
x = *P* .011 — .050
o = *P* .051 — .10
(—) = *P* .11 — .30
— = $P > .30$

Table 6.14. A Comparison of Two Short-Interval Investigations in the *AB* Classes: Correlations ($r$) between Status Scores

| Class | $N$ | $r$ |
|---|---|---|
| 4a | 31 | .83 |
| 4b | 32 | .91 |
| 5b | 32 | .80 |
| 6a | 27 | .85 |
| 6b | 31 | .81 |
| 7a | 30 | .85 |
| 7b | 29 | .80 |
| 8a | 30 | .84 |
| 8b | 21 | .45 |

*N. B.* In order to correct for methodological differences only the first three choices given were used in calculating the present status scores

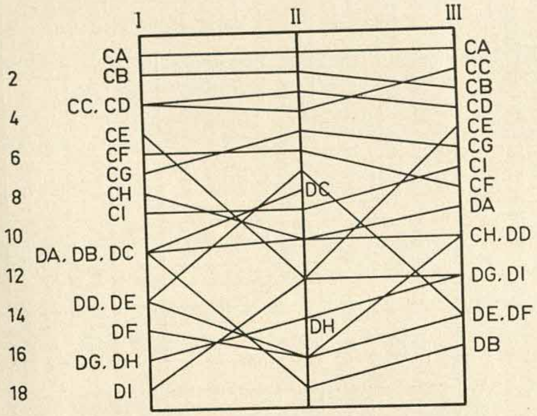

Fig. 6.8. Status rank on the basis of workmate choices on three different test occasions (3mf, boys; intervals: I—II, 4 months; II—III, 9 months; I—III, 13 months).

sufficiently consistent to give a sociopreferential exploration of the type utilized here a certain degree of diagnostic and prognostic value. On the other hand, we are still far enough from a one-to-one correspondence to find this structure at the same time sufficiently flexible to leave room to some extent for educational optimism concerning the possibilities to influence the social development of the pupils in a direction we consider favorable. However, we also find that the degree of consistency is very

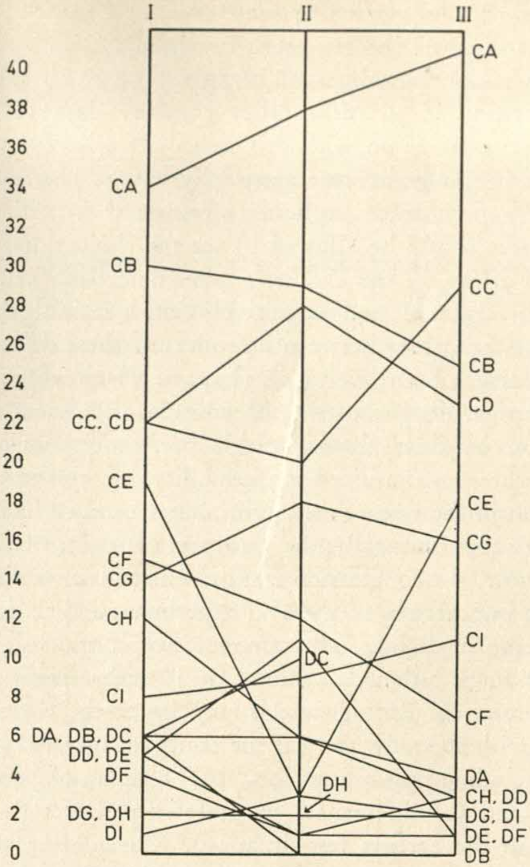

Fig. 6.9. Status scores on the basis of workmate choices on three different test occasions (the same pupils and intervals as in Fig. 6.8).

different for the six basic sociopreferential variables: the number of outgoing choices is usually considerably less consistent than the number of incoming choices, and the comparisons involving negative variables as a rule result in lower coefficients than comparisons involving the corresponding positive variables. If we compare these results with those presented above concerning the distribution of the different variables, we find that these inter-variable differences to a great extent reflect the varying degree of discrimination elicited by the different variables. The general time interval hypothesis, already fairly well founded empirically, is further supported by the present data in Tables 6.12 and 6.13; that is, on the whole (that is, disregarding some exceptions), the longer the temporal interval, the lower the test-retest consistency.[5]

The data from the short-interval investigations in the *AB* Classes are especially interesting in so far as they compare data collected by the teachers in direct connection with the immediate school situation ("Your class is to work in groups in some geography lessons") with data collected by an outsider-experimenter explicitly stressing that neither the teacher nor the classmates would be allowed to see the choices and that thus the choices had no effect on the chooser's immediate situation. Comparisons between cognitively real and cognitively experimental situations seem important, since the debate between defenders of these different methodological principles has been lively (cf. chap. 2: VI above), whereas at the same time empirical demonstrations of possible differences as a rule have been conspicuous by their absence within preferential sociometry. In the present case where we utilized a possibility of comparison that was accidentally met in the research situation, but where we had no possibility of equating pre-experimentally the two preferential situations compared as to other factors, the comparison can of course give no definitive results concerning the importance of the real-experimental dichotomy, but since the need for empirical data is paramount, we consider it of interest to present our findings, although we must do it with certain reservations as to their interpretation. Factors which may lower the correlations besides the factor we wish to study are: (a) the temporal interval (approximately two weeks), including possibilities for "real" changes of "pure preferential orientations", and (b) differences in preference aspect (a higher degree of specificity in the earliest test-situation).[6] Considering the presence of these additional factors, both presumably causing some decrease of intercorrelation, we may conclude that the net discrepancy brought about by utilizing a cognitively experimental situation in one case and a cognitively real situation in the other seems to be rather small. Hence, if utilizing the present data, neither the defenders of the effect situation nor the defenders of the no-effect situation seem to be able to base their argument on any important empirical differences between the two approaches, as far as status scores from a single preferential situation are concerned.

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[5] The stability coefficients vary from one class to another. Class 5mf, for example, shows a lower coefficient than the other *MF* Classes. It is not easy to know the primary cause, but a study of the sociomatrix may suggest certain ideas. In the present case, the two most chosen boys, *CA* and *CB*, gave each other mutual first choices as workmates and mutual leader choices at the first occasion. At the second occasion, for some reason or other *CB* withdraws his choice and, at the same time, several other classmates do the same. A low coefficient may depend on such a restructuring around one or a few central pupils.

[6] On the other hand, there had been no time for regrouping according to the wishes of the pupils, so this factor could not influence the result.

## 3. Analysis of the Changes of Single Individual-Individual Relations

### A. *The summary sociomatrix as an aid in intertemporal investigations*

In order to facilitate a detailed intertemporal analysis of choices it may be of some use to construct complex or summary matrices (cf. Bjerstedt 1952 a). As an illustrating example we present such a matrix for class 3m (Table 6.15). In each dyad cell information is given about both outgoing and incoming choices in two different preference aspects (choice of workmates and friendship reports) with respect to all three test occasions. To be able to give all these twelve different pieces of information, the plus symbols are substituted by figures, which are arranged in a miniature twelve-field system within each single dyad cell (cf. Table 6.16). When a negative choice is given instead of a positive this is denoted by a minus, and when neither positive nor negative choices are given, a zero is used as a symbol for "indifference".

An example will be given. The dyad cell *AA* : *AB* presents the relations between pupil *AA* and pupil *AB* in the following form: $\begin{array}{l}\underline{44}X\\ \underline{44}X.\\ 22X\\ 44X\end{array}$ In the first row within the cell *AA*'s choices to *AB* as a workmate are given: *AA* thus gives *AB* his first choice both the first and the second time, (4 = a first choice, 3 = a second choice, etc.). At the third test occasion *AA* had left the class and could therefore not be chosen (symbolized by *X*). On the first two occasions, *AB* received leader choices from *AA* (symbolized by underlined figures). In the second row, *AB*'s choices to *AA* are presented: we find a complete reciprocation. The third and the fourth rows within the dyad cell present the result from the friendship reports; in the third row we find that *AA* has given *AB* his third choice at both test occasions, and the fourth row shows that *AB* in both cases reciprocated on the first-choice level.

Thanks to this condensation of twelve pieces of information about each pair of individuals — surveying test and retests over a year — we may obtain a fairly good picture of the preferential relations between the

# Table 6.15. Summary Sociomatrix for Class 3m

(*Key:* Table 6.16)

| | AA | AB | AC | AD | AE | AF | AG | AH | AI | AJ | AK | AL | AM | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AA | | 44X<br>44X<br>22X<br>44X | 20X<br>40X<br>00X<br>40X | 00X<br>01X<br>00X<br>00X | 00X<br>22X<br>00X<br>02X | 02X<br>44X<br>03X<br>44X | 00X<br>10X<br>00X<br>00X | 00X<br>44X<br>00X<br>42X | 00X<br>44X<br>00X<br>04X | 10X<br>34X<br>00X<br>44X | 00X<br>10X<br>00X<br>00X | 10X<br>00X<br>00X<br>00X | 00X<br>00X<br>00X<br>00X | 00X<br>02X<br>00X<br>04X | 10X<br>43X<br>30X<br>40X | 00X<br>01X<br>00X<br>00X | 33X<br>44X<br>44X<br>44X | 00X<br>00X<br>00X<br>00X | 00X<br>11X<br>00X<br>00X | 10X<br>03X<br>00X<br>04X | 01X<br>33X<br>00X<br>00X | 00X<br>1-X<br>00X<br>00X | 00X<br>00X<br>00X<br>00X | -0X<br>00X<br>00X<br>00X | 01X<br>03X<br>00X<br>03X | 10X<br>44X<br>00X<br>44X | 00X<br>00X<br>00X<br>00X |
| AB | 44X<br>44X<br>44X<br>22X | | 010<br>120<br>000<br>020 | 103<br>124<br>004<br>024 | 000<br>110<br>000<br>200 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>100<br>000<br>000 | 000<br>110<br>000<br>000 | 000<br>024<br>000<br>003 | 000<br>100<br>000<br>200 | 000<br>000<br>000<br>000 | 000<br>001<br>000<br>000 | 234<br>-13<br>232<br>033 | 110<br>324<br>000<br>324 | 000<br>00-<br>000<br>000 | 000<br>010<br>000<br>200 | 000<br>000<br>000<br>000 | 012<br>444<br>000<br>430 | 321<br>441<br>323<br>240 | 000<br>100<br>000<br>000 | 000<br>001<br>000<br>000 | 0-0<br>000<br>000<br>000 | --0<br>000<br>000<br>002 | 00-<br>23-<br>000<br>230 | 00X<br>04X<br>00X<br>03X |
| AC | 40X<br>20X<br>40X<br>00X | 120<br>010<br>020<br>000 | | 110<br>111<br>300<br>000 | 001<br>111<br>000<br>000 | 030<br>030<br>030<br>030 | 010<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 113<br>101<br>003<br>002 | 000<br>000<br>000<br>000 | 300<br>331<br>200<br>232 | 000<br>000<br>000<br>000 | 002<br>003<br>002<br>000 | 040<br>330<br>040<br>230 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 100<br>412<br>000<br>402 | 004<br>101<br>004<br>003 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 011<br>141<br>000<br>000 | 200<br>040<br>000<br>240 | 000<br>000<br>000<br>000 | 000<br>040<br>000<br>040 | 00-<br>120<br>000<br>020 | 00X<br>02X<br>00X<br>04X |
| AD | 01X<br>00X<br>00X<br>00X | 124<br>103<br>024<br>004 | 111<br>110<br>000<br>300 | | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>100<br>000<br>000 | 331<br>311<br>330<br>200 | 000<br>00-<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>103<br>000<br>003 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>010<br>000<br>002 | 442<br>442<br>442<br>443 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>010<br>000<br>000 | 003<br>000<br>003<br>004 | 001<br>214<br>000<br>004 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 200<br>400<br>200<br>400 | ---<br>---<br>000<br>000 | 00X<br>00X<br>00X<br>00X |
| AE | 22X<br>00X<br>02X<br>00X | 110<br>000<br>200<br>000 | 111<br>001<br>000<br>000 | 000<br>000<br>000<br>000 | | 000<br>001<br>000<br>000 | 444<br>444<br>444<br>444 | 000<br>000<br>000<br>000 | 100<br>200<br>000<br>000 | 010<br>000<br>000<br>000 | 000<br>10-<br>000<br>000 | 000<br>000<br>000<br>000 | 333<br>431<br>332<br>442 | 101<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 011<br>023<br>000<br>023 | 000<br>010<br>000<br>000 | 100<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 111<br>234<br>000<br>443 | 000<br>000<br>000<br>000 | 002<br>333<br>003<br>333 | 000<br>000<br>000<br>000 | ---<br>000<br>000<br>000 | 00X<br>00X<br>00X<br>00X |
| AF | 44X<br>02X<br>44X<br>03X | 000<br>000<br>000<br>000 | 030<br>030<br>030<br>030 | 000<br>000<br>000<br>000 | 001<br>000<br>000<br>000 | | 000<br>000<br>000<br>000 | 1--<br>334<br>000<br>333 | 113<br>103<br>003<br>003 | 224<br>434<br>024<br>334 | 000<br>103<br>000<br>000 | 000<br>-00<br>000<br>000 | -00<br>000<br>000<br>000 | 310<br>443<br>300<br>423 | 0-0<br>0--<br>000<br>000 | 000<br>000<br>000<br>000 | 002<br>-00<br>002<br>000 | 000<br>3--<br>000<br>000 | ---<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>003<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>011<br>000<br>003 | 000<br>010<br>000<br>000 | 00X<br>00X<br>00X<br>00X |
| AG | 10X<br>00X<br>00X<br>00X | 000<br>000<br>000<br>000 | 000<br>010<br>000<br>000 | 000<br>000<br>000<br>000 | 444<br>444<br>444<br>444 | 000<br>000<br>000<br>000 | | 000<br>000<br>000<br>000 | 101<br>010<br>000<br>000 | 001<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 321<br>320<br>320<br>330 | 001<br>000<br>000<br>000 | --0<br>000<br>000<br>000 | 000<br>001<br>000<br>000 | 000<br>000<br>000<br>000 | 100<br>114<br>000<br>004 | 110<br>120<br>000<br>030 | -00<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 012<br>012<br>002<br>032 | 000<br>000<br>000<br>000 | 233<br>442<br>233<br>444 | 00-<br>000<br>000<br>000 | 000<br>002<br>000<br>000 | 00X<br>00X<br>00X<br>00X |
| AH | 44X<br>00X<br>42X<br>00X | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 100<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 334<br>1--<br>333<br>000 | 000<br>000<br>000<br>000 | | 200<br>100<br>000<br>400 | 000<br>2-1<br>000<br>002 | 000<br>000<br>000<br>000 | 000<br>00-<br>000<br>000 | 000<br>000<br>000<br>000 | 012<br>200<br>000<br>000 | -23<br>001<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 100<br>-11<br>002<br>000 | -01<br>444<br>244<br>444 | 0-0<br>000<br>000<br>000 | 0-0<br>000<br>000<br>000 | 000<br>010<br>000<br>000 | 000<br>002<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 0-0<br>310<br>000<br>300 | 00X<br>00X<br>00X<br>00X |
| AI | 44X<br>00X<br>04X<br>00X | 100<br>000<br>000<br>000 | 101<br>113<br>002<br>003 | 311<br>331<br>200<br>330 | 200<br>100<br>000<br>000 | 103<br>113<br>003<br>003 | 010<br>101<br>000<br>000 | 100<br>200<br>400<br>000 | | 034<br>100<br>030<br>000 | 000<br>100<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>004<br>000<br>004 | 000<br>000<br>000<br>000 | 020<br>0-0<br>020<br>000 | 012<br>100<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 101<br>002<br>304<br>002 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>010<br>000<br>000 | 000<br>000<br>000<br>030 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | --0<br>--3<br>000<br>002 | 00X<br>00X<br>00X<br>00X |
| AJ | 34X<br>10X<br>44X<br>00X | 110<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 00-<br>000<br>000<br>000 | 000<br>010<br>000<br>000 | 434<br>224<br>334<br>024 | 000<br>001<br>000<br>000 | 2-1<br>000<br>002<br>000 | 100<br>034<br>000<br>030 | | 000<br>000<br>000<br>000 | 100<br>200<br>000<br>400 | 100<br>000<br>000<br>000 | 003<br>004<br>223<br>304 | --2<br>004<br>000<br>000 | 011<br>001<br>000<br>000 | 000<br>000<br>000<br>000 | 021<br>141<br>000<br>340 | 000<br>000<br>000<br>000 | 0--<br>010<br>000<br>000 | 010<br>000<br>000<br>000 | 000<br>421<br>000<br>300 | 000<br>000<br>000<br>300 | 000<br>000<br>000<br>000 | -00<br>000<br>000<br>000 | 000<br>100<br>000<br>000 | 00X<br>00X<br>00X<br>00X |
| AK | 10X<br>00X<br>00X<br>00X | 024<br>000<br>003<br>000 | 331<br>300<br>232<br>200 | 000<br>000<br>000<br>000 | 10-<br>000<br>000<br>000 | 103<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 100<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | | 000<br>402<br>000<br>000 | 00-<br>000<br>000<br>000 | 442<br>000<br>444<br>000 | -00<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 100<br>000<br>000<br>000 | 000<br>030<br>000<br>030 | 001<br>000<br>000<br>000 | 001<br>000<br>000<br>000 | -00<br>000<br>020<br>000 | 000<br>000<br>000<br>000 | 201<br>430<br>300<br>000 | 0--<br>---<br>000<br>000 | 000<br>000<br>000<br>000 | 100<br>010<br>000<br>000 | 00X<br>00X<br>00X<br>00X |
| AL | 0XX<br>10X<br>0XX<br>00X | 1X0<br>000<br>2X0<br>000 | 0X0<br>000<br>0X0<br>000 | 1X3<br>000<br>0X3<br>000 | 0X0<br>000<br>0X0<br>000 | -X0<br>000<br>0X0<br>000 | 0X0<br>000<br>0X0<br>000 | 0X-<br>000<br>0X0<br>000 | 0X0<br>000<br>0X0<br>000 | 2X0<br>100<br>4X0<br>000 | 4X2<br>000<br>0X0<br>000 | | 0X0<br>000<br>0X0<br>000 | 0X0<br>000<br>0X0<br>000 | 3X0<br>000<br>0X0<br>000 | 0X0<br>000<br>0X0<br>000 | 1X0<br>000<br>3X0<br>000 | -X1<br>000<br>0X0<br>000 | 0X0<br>000<br>0X0<br>000 | -X0<br>000<br>0X2<br>000 | 0X0<br>000<br>0X0<br>002 | 0X0<br>000<br>0X0<br>000 | 0X4<br>323<br>0X4<br>402 | -X0<br>100<br>0X0<br>000 | 0X0<br>300<br>0X0<br>300 | 0X0<br>100<br>0X0<br>000 | 0XX<br>00X<br>0XX<br>00X |
| AM | 00X<br>00X<br>00X<br>00X | 000<br>000<br>000<br>000 | 003<br>002<br>000<br>002 | 000<br>000<br>000<br>000 | 431<br>333<br>442<br>332 | 000<br>-00<br>000<br>000 | 320<br>321<br>330<br>320 | 000<br>000<br>000<br>000 | 004<br>000<br>004<br>000 | 000<br>100<br>000<br>000 | 000<br>00-<br>000<br>000 | 000<br>000<br>000<br>000 | | 000<br>000<br>000<br>000 | -0-<br>0-0<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>200<br>000<br>000 | 002<br>-00<br>003<br>000 | 000<br>0--<br>000<br>000 | 000<br>000<br>000<br>000 | 240<br>110<br>220<br>020 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | ---<br>-00<br>000<br>000 | 00X<br>0-X<br>00X<br>00X |
| BA | 02X<br>00X<br>04X<br>00X | 001<br>000<br>000<br>000 | 330<br>040<br>230<br>040 | 000<br>000<br>000<br>000 | 000<br>101<br>000<br>000 | 443<br>310<br>423<br>300 | 000<br>001<br>000<br>000 | 200<br>012<br>000<br>000 | 000<br>000<br>000<br>000 | 004<br>003<br>304<br>223 | 000<br>442<br>000<br>444 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | | 002<br>001<br>002<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>1-1<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 001<br>004<br>000<br>003 | 000<br>011<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>001<br>000<br>000 | 0-X<br>00X<br>00X<br>00X |
| BB | 43X<br>10X<br>40X<br>30X | -13<br>234<br>033<br>232 | 000<br>000<br>000<br>000 | 010<br>000<br>002<br>000 | 000<br>000<br>000<br>000 | 0--<br>0-0<br>000<br>000 | 000<br>--0<br>000<br>000 | 001<br>-23<br>000<br>000 | 0-0<br>020<br>000<br>020 | 004<br>--2<br>000<br>000 | 000<br>-00<br>000<br>000 | 000<br>300<br>000<br>000 | 0-0<br>-0-<br>000<br>000 | 001<br>002<br>000<br>002 | | 200<br>000<br>200<br>000 | 00-<br>000<br>000<br>000 | 000<br>0-0<br>000<br>000 | 000<br>000<br>000<br>000 | 342<br>203<br>344<br>203 | -20<br>022<br>020<br>430 | 010<br>-1-<br>000<br>000 | 001<br>011<br>000<br>004 | 00-<br>000<br>000<br>000 | 00-<br>000<br>000<br>000 | ---<br>---<br>000<br>000 | 00X<br>00X<br>00X<br>00X |
| BC | 01X<br>00X<br>00X<br>00X | 324<br>110<br>324<br>000 | 000<br>000<br>000<br>000 | 442<br>442<br>443<br>442 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 001<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 100<br>012<br>000<br>000 | 001<br>011<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>200<br>000<br>200 | | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 233<br>001<br>232<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 0-0<br>003<br>000<br>000 | -0-<br>001<br>000<br>000 | 00X<br>00X<br>00X<br>00X |
| BD | 44X<br>33X<br>44X<br>44X | 00-<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | -00<br>002<br>000<br>002 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>100<br>000<br>000 | 000<br>100<br>000<br>300 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>00-<br>000<br>000 | 000<br>000<br>000<br>000 | | 000<br>--0<br>000<br>000 | 333<br>203<br>333<br>200 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 004<br>004<br>004<br>004 | 00X<br>00X<br>00X<br>00X |
| BE | 00X<br>00X<br>00X<br>00X | 010<br>000<br>200<br>000 | 412<br>100<br>402<br>000 | 000<br>000<br>000<br>000 | 023<br>011<br>023<br>000 | 3--<br>000<br>000<br>000 | 114<br>100<br>004<br>002 | -11<br>100<br>000<br>000 | 000<br>000<br>000<br>000 | 141<br>021<br>340<br>000 | 030<br>000<br>030<br>000 | 000<br>-01<br>000<br>000 | 200<br>000<br>000<br>000 | 1-1<br>000<br>000<br>000 | 0-0<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | --0<br>000<br>000<br>000 | | 000<br>330<br>000<br>320 | 001<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 001<br>000<br>000<br>000 | 001<br>000<br>000<br>000 | 010<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 0--<br>100<br>000<br>000 | 00X<br>00X<br>00X<br>00X |
| BF | 11X<br>00X<br>00X<br>00X | 000<br>000<br>000<br>000 | 101<br>004<br>003<br>004 | 010<br>000<br>000<br>000 | 010<br>000<br>000<br>000 | 000<br>---<br>000<br>000 | 120<br>110<br>030<br>000 | 444<br>-01<br>444<br>244 | 002<br>101<br>002<br>304 | 000<br>000<br>000<br>000 | 000<br>001<br>000<br>000 | 000<br>000<br>000<br>000 | -00<br>002<br>000<br>003 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 203<br>333<br>200<br>333 | 330<br>000<br>320<br>000 | | 000<br>000<br>000<br>000 | 0-0<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>100<br>000<br>000 | 000<br>114<br>000<br>200 | 000<br>000<br>000<br>000 | -0X<br>03X<br>00X<br>02X |
| BG | 03X<br>10X<br>04X<br>00X | 444<br>012<br>430<br>000 | 000<br>000<br>000<br>000 | 000<br>003<br>004<br>003 | 000<br>100<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>-00<br>000<br>000 | 000<br>0-0<br>000<br>000 | 000<br>000<br>000<br>000 | 010<br>0--<br>000<br>000 | 000<br>001<br>000<br>000 | 000<br>-00<br>000<br>002 | 0--<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 203<br>342<br>203<br>344 | 001<br>233<br>000<br>232 | 000<br>000<br>000<br>000 | 000<br>001<br>000<br>000 | 000<br>000<br>000<br>000 | | 322<br>000<br>322<br>323 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>020 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>00-<br>000<br>000 | 00X<br>00X<br>00X<br>00X |
| BH | 33X<br>01X<br>00X<br>00X | 441<br>321<br>240<br>323 | 000<br>000<br>000<br>000 | 214<br>001<br>004<br>000 | 000<br>000<br>000<br>000 | 003<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>0-0<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>010<br>000<br>000 | 000<br>-00<br>000<br>020 | 000<br>000<br>002<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 022<br>-20<br>430<br>020 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>0-0<br>000<br>000 | 000<br>322<br>323<br>322 | | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>-00<br>000<br>000 | 000<br>002<br>000<br>004 | 000<br>000<br>000<br>000 | 00X<br>00X<br>00X<br>00X |
| BI | 1-X<br>00X<br>00X<br>00X | 100<br>000<br>000<br>000 | 141<br>011<br>000<br>000 | 000<br>000<br>000<br>000 | 234<br>111<br>443<br>000 | 000<br>000<br>000<br>000 | 012<br>012<br>032<br>002 | 010<br>000<br>000<br>000 | 010<br>000<br>000<br>000 | 421<br>000<br>300<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 110<br>240<br>020<br>220 | 000<br>000<br>000<br>000 | -1-<br>010<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>001<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | | 010<br>000<br>000<br>000 | 303<br>224<br>204<br>222 | 000<br>000<br>000<br>000 | ---<br>001<br>000<br>003 | 00X<br>00X<br>00X<br>00X |
| BJ | 00X<br>00X<br>00X<br>00X | 001<br>000<br>000<br>000 | 040<br>200<br>240<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 002<br>000<br>000<br>000 | 000<br>000<br>030<br>000 | 000<br>000<br>300<br>000 | 430<br>201<br>000<br>300 | 323<br>004<br>402<br>004 | 000<br>000<br>000<br>000 | 004<br>001<br>003<br>000 | 011<br>001<br>004<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>001<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>020<br>000 | 000<br>000<br>000<br>000 | 000<br>010<br>000<br>000 | | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 0--<br>100<br>000<br>000 | 00X<br>00X<br>00X<br>00X |
| BK | 00X<br>-0X<br>00X<br>00X | 000<br>0-0<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 333<br>002<br>333<br>003 | 000<br>000<br>000<br>000 | 442<br>233<br>444<br>233 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | ---<br>0--<br>000<br>000 | 100<br>-00<br>000<br>000 | 000<br>000<br>000<br>000 | 011<br>000<br>000<br>000 | 000<br>00-<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>010<br>000<br>000 | 100<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | -00<br>000<br>000<br>000 | 224<br>303<br>222<br>204 | 000<br>000<br>000<br>000 | | 100<br>000<br>000<br>000 | 000<br>001<br>000<br>000 | 00X<br>00X<br>00X<br>00X |
| BL | 03X<br>01X<br>03X<br>00X | 000<br>--0<br>002<br>000 | 040<br>000<br>040<br>000 | 400<br>200<br>400<br>200 | 000<br>000<br>000<br>000 | 011<br>000<br>003<br>000 | 000<br>00-<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>-00<br>000<br>000 | 000<br>000<br>000<br>000 | 300<br>000<br>300<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>00-<br>000<br>000 | 003<br>0-0<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 114<br>000<br>200<br>000 | 000<br>000<br>000<br>000 | 002<br>000<br>004<br>000 | 000<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 000<br>100<br>000<br>000 | | 020<br>0-0<br>020<br>000 | 00X<br>00X<br>00X<br>00X |
| BM | 44X<br>10X<br>44X<br>00X | 23-<br>00-<br>230<br>000 | 120<br>00-<br>020<br>000 | ---<br>---<br>000<br>000 | 000<br>---<br>000<br>000 | 010<br>000<br>000<br>000 | 002<br>000<br>000<br>000 | 310<br>0-0<br>300<br>000 | --3<br>--0<br>002<br>000 | 100<br>000<br>000<br>000 | 010<br>100<br>000<br>000 | 100<br>000<br>000<br>000 | -00<br>---<br>000<br>000 | 001<br>000<br>000<br>000 | ---<br>---<br>000<br>000 | 001<br>-0-<br>000<br>000 | 004<br>004<br>004<br>004 | 100<br>0--<br>000<br>000 | 000<br>000<br>000<br>000 | 00-<br>000<br>000<br>000 | 000<br>000<br>000<br>000 | 001<br>---<br>003<br>000 | 100<br>0--<br>000<br>000 | 001<br>000<br>000<br>000 | 0-0<br>020<br>000<br>020 | | 00X<br>00X<br>00X<br>00X |
| BN | X0X<br>00X<br>X0X<br>00X | X4X<br>00X<br>X3X<br>00X | X2X<br>00X<br>X4X<br>00X | X0X<br>00X<br>X0X<br>00X | X0X<br>00X<br>X0X<br>00X | X0X<br>00X<br>X0X<br>00X | X0X<br>00X<br>X0X<br>00X | X0X<br>00X<br>X0X<br>00X | X0X<br>00X<br>X0X<br>00X | X0X<br>00X<br>X0X<br>00X | X0X<br>00X<br>X0X<br>00X | X0X<br>00X<br>X0X<br>00X | X-X<br>00X<br>X0X<br>00X | X0X<br>0-X<br>X0X<br>00X | X0X<br>00X<br>X0X<br>00X | X0X<br>00X<br>X0X<br>00X | X0X<br>00X<br>X0X<br>00X | X0X<br>00X<br>X0X<br>00X | X3X<br>-0X<br>X2X<br>00X | X0X<br>00X<br>X0X<br>00X | X0X<br>00X<br>X0X<br>00X | X0X<br>00X<br>X0X<br>00X | X0X<br>00X<br>X0X<br>00X | X0X<br>00X<br>X0X<br>00X | X0X<br>00X<br>X0X<br>00X | X0X<br>00X<br>X0X<br>00X | |

Table 6.16. Symbol Arrangement in a Single Dyad Cell of the Summary Sociomatrix

| Preference aspect | Preference direction | Test occasion | | |
|---|---|---|---|---|
| | | I | II | III |
| choice of workmate *(w)* | outgoing *(P)* | $P_{Iw}$ | $P_{IIw}$ | $P_{IIIw}$ |
| | incoming $(\bar{P})$ | $\bar{P}_{Iw}$ | $\bar{P}_{IIw}$ | $\bar{P}_{IIIw}$ |
| friendship report *(f)* | outgoing *(P)* | $P_{If}$ | $P_{IIf}$ | $P_{IIIf}$ |
| | incoming $(\bar{P})$ | $\bar{P}_{If}$ | $\bar{P}_{IIf}$ | $\bar{P}_{IIIf}$ |

pupils. In many cases we find the constellation $\begin{array}{c}000\\000\\000\\000\end{array}$: these pupils have not chosen each other on any occasion. But there are also individuals (cf. *AE* and *AG*) with such a fundamental positive relationship that the dyad cell will receive the following form: $\begin{array}{c}\underline{444}\\\underline{444}\\444\\444\end{array}$ — individuals who have chosen each other reciprocally in the first place in both preference aspects at all test occasions (and, further, chosen each other as leaders all through). Between these extreme cases concerning the positive choices we find all kinds of mixed forms: from those who nearly always have chosen each other, as, for instance, *AF* and *AJ*: $\begin{array}{c}22\underline{4}\\434\\024\\334\end{array}$, to the large number, where only a single low-level choice stands out against a background of zeros, as, for example, between *AB* and *AI*: $\begin{array}{c}000\\100\\000\\000\end{array}$. Consistent negative relationships are found between *AD* and *BM* and between *BB* and *BM*: $\begin{array}{c}---\\---\\000\\000\end{array}$.

By reading the cells from the left to the right we get an idea of the *intertemporal development* of the dyad. Sometimes we meet relationships with a continuously increasing degree of "positivity", as, for instance, the workmate preferences between *AB* and *BB*: $\begin{smallmatrix}234\\-13\end{smallmatrix}$; in other cases we find relationships with a continuously decreasing degree of "positivity", in still other consistent relationships on the same level of preference, or irregular changes of the type 040, etc.

By comparing rows 1 and 2 with rows 3 and 4 we get an idea of the *interaspectual similarity or dissimilarity.*

By comparing the first row with the second and the third row with the fourth we obtain a picture of the *interdirectional similarity or dissimilarity*, that is, the degree of reciprocation. We find sometimes exact similarity, as, for instance, in the relation between *BD* and *BM*: $\begin{smallmatrix}00\underline{4}\\00\underline{4}\\004\\004\end{smallmatrix}$, but often conspicuous discrepancies, as when *BI* gives *AJ* positive choices as a workmate in all the choice situations without receiving any reciprocations. However, in this case it may seem as if this lacking reciprocity has been somehow "perceived": the intensity is clearly decreasing intertemporally: $\begin{smallmatrix}421\\000\\300\\000\end{smallmatrix}$.

### B. *Prediction of intertemporal development from characteristics of the now-situation*

In cases where we, from the specific test-moment, may make predictions of changes to come, the specificity of the moment is diminished *in spite of* changes. In this section we will discuss a few factors which might influence the degree of stability.

#### a. *Different kinds of stability percentages*

When dealing with different levels of preferences it is important to state the precise method when calculating stability percentages — a fact which is often overlooked. In this section three different methods are employed: (a) the percentage of *quantitatively identical* (or level-identical) constancies; (b) the percentage of *qualitatively identical* constancies (i. e., the percentage of retained positive preferences, irrespective of preference level at "relatum time")[7]; and (c) *retained preference level as a percentage of "maximum intensity"*. For every constancy comparison made here, we use at least two different methods (cf. BJERSTEDT 1952 a).

If we start from the choices in an earlier test-situation and examine what percentage of these are retained in a later test-situation, we have employed a *prospective* approach (referent time earlier than relatum time). However, we may as well start from a later test occasion and examine what percentage of these choices are found already at an earlier test occasion: a *retrospective* approach (referent time later than relatum time). In certain cases we will use both types of procedure.

### b. *General tendencies*

*Data survey.* Tables 6.17—6.20 show the constancy of single choices in classes 3m and 6f. Table 6.17 compares the first and the second test occasion in class 3m. Out of the 25 first choices 17 or 68 % are quantitatively identical after the three-month interval ("quant.id." in the table), that is, 68 % of first choices from the earliest test occasion are retained not only as positive choices, but also as *first* choices. If we extend the examination to deal with how many of the 25 first choices which are still retained after three months as positive choices to the same individuals, we find 23 or 92 % in this way qualitatively identical choices ("qual.id." in the table). Among the first choices that are not quantitatively identical there are four second choices, one third choice, one low-level positive choice, and two "indifferences". In average 33 % of the positive choices are quantitatively identical and 55 % qualitatively identical; the leadership choices have been retained in 65 % of the cases, and the rejections in 45 %. However, more interesting than the average for the positive choices is the systematic change from preference level to preference level. Qualitatively identical are 92 % of first choices, 84 % of second choices, 45 % of third choices, and 32 % of other positive choices. We find practically the same series of falling numbers in class 6f after the three-month interval: 92 %, 83 %, 70 %, 45 % (Table 6.18). Tables 6.19 and 6.20 present comparisons for the nine-month interval. In this case the

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[7] If we ask what percentage of choices at $\text{Time}_1$ are retained at $\text{Time}_2$, we may speak about $\text{Time}_1$ as the "referent time" and $\text{Time}_2$ as the "relatum time". If we ask what percentage of choices at $\text{Time}_2$ are found already at $\text{Time}_1$, $\text{Time}_2$ would be "referent time" and $\text{Time}_1$ "relatum time".

Table 6.17. Intertemporal Changes of Individual-Individual Relations
(Class 3m. A 3-month interval)

| Preference level | Number of choices | Retained as | | Changed into | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | quant. id. | qual. id. | 1st | 2nd | 3rd | 4th etc. | 0 | — |
| 1st | 25 | 17<br>(68 %) | 23<br>(92 %) | x | 4 | 1 | 1 | 2 | 0 |
| 2nd | 25 | 10<br>(40 %) | 21<br>(84 %) | 2 | x | 6 | 3 | 3 | 1 |
| 3rd | 22 | 3<br>(14 %) | 10<br>(45 %) | 1 | 5 | x | 1 | 11 | 1 |
| 4th etc. | 62 | 14<br>(23 %) | 20<br>(32 %) | 2 | 0 | 4 | x | 39 | 3 |
| — | 33 | 15<br>(45 %) | 15<br>(45 %) | 0 | 0 | 2 | 3 | 13 | x |
| *L* | 23 | 15<br>(65 %) | 15<br>(65 %) | — | — | — | — | — | — |
| Total pos. | 134 | 44<br>(33 %) | 74<br>(55 %) | | | | | | |

Table 6.18. Intertemporal Changes of Individual-Individual Relations
(Class 6f. A 3-month interval)

| Preference level | Number of choices | Retained as | | Changed into | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | quant. id. | qual. id. | 1st | 2nd | 3rd | 4th etc. | 0 | — |
| 1st | 24 | 18<br>(75 %) | 22<br>(92 %) | x | 2 | 1 | 1 | 2 | 0 |
| 2nd | 24 | 8<br>(33 %) | 20<br>(83 %) | 2 | x | 6 | 4 | 4 | 0 |
| 3rd | 23 | 6<br>(26 %) | 16<br>(70 %) | 1 | 3 | x | 6 | 5 | 2 |
| 4th etc. | 84 | 28<br>(33 %) | 38<br>(45 %) | 1 | 5 | 4 | x | 45 | 1 |
| — | 27 | 12<br>(44 %) | 12<br>(44 %) | 0 | 0 | 0 | 2 | 13 | x |
| *L* | 24 | 15<br>(63 %) | 15<br>(63 %) | — | — | — | — | — | — |
| Total pos. | 155 | 60<br>(39 %) | 96<br>(62 %) | | | | | | |

Table 6.19. Intertemporal Changes of Individual-Individual Relations
(Class 3m. A 9-month interval)

| Preference level | Number of choices | Retained as | | Changed into | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | quant. id. | qual. id. | 1st | 2nd | 3rd | 4th etc. | 0 | — |
| 1st | 17 | 4<br>(24 %) | 13<br>(76 %) | x | 1 | 5 | 3 | 4 | 0 |
| 2nd | 20 | 5<br>(25 %) | 13<br>(65 %) | 4 | x | 1 | 3 | 6 | 1 |
| 3rd | 20 | 2<br>(10 %) | 13<br>(65 %) | 5 | 2 | x | 4 | 7 | 0 |
| 4th etc. | 50 | 11<br>(21 %) | 23<br>(44 %) | 3 | 3 | 6 | x | 26 | 1 |
| — | 37 | 18<br>(49 %) | 18<br>(49 %) | 0 | 1 | 1 | 2 | 15 | x |
| *L* | 14 | 3<br>(21 %) | 3<br>(21 %) | — | — | — | — | — | — |
| Total pos. | 107 | 22<br>(21 %) | 62<br>(58 %) | | | | | | |

Table 6.20. Intertemporal Changes of Individual-Individual Relations
(Class 6f. A 9-month interval)

| Preference level | Number of choices | Retained as | | Changed into | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | quant. id. | qual. id. | 1st | 2nd | 3rd | 4th etc. | 0 | — |
| 1st | 24 | 11<br>(46 %) | 19<br>(79 %) | x | 4 | 3 | 1 | 5 | 0 |
| 2nd | 24 | 3<br>(13 %) | 18<br>(75 %) | 4 | x | 1 | 10 | 5 | 1 |
| 3rd | 23 | 4<br>(17 %) | 13<br>(57 %) | 1 | 2 | x | 6 | 10 | 0 |
| 4th etc. | 79 | 23<br>(29 %) | 38<br>(48 %) | 4 | 5 | 6 | x | 40 | 1 |
| — | 27 | 12<br>(44 %) | 12<br>(44 %) | 0 | 2 | 2 | 1 | 10 | x |
| *L* | 24 | 8<br>(33 %) | 8<br>(33 %) | — | — | — | — | — | — |
| Total pos. | 150 | 41<br>(27 %) | 88<br>(59 %) | | | | | | |

Table 6.21. The Constancy of Different Preference Levels
(The percentage of retained positive preferences, irrespective of preference level at relatum time)
(*MF* Classes)

| Direction of comparison | Grade level | First choice | Second choice | Third choice | Fourth choice etc. |
|---|---|---|---|---|---|
| I/II | 3—8 | 86.3 | 76.0 | 68.7 | 53.9 |
| | | (183) | (183) | (182) | (538) |
| II/I | 3—8 | 86.3 | 75.3 | 70.9 | 52.5 |
| | | (182) | (182) | (182) | (552) |
| II/III | 3—5 | 75.5 | 71.3 | 61.7 | 43.5 |
| | | (94) | (94) | (94) | (285) |
| III/II | 3—5 | 83.7 | 72.8 | 59.1 | 50.4 |
| | | (92) | (92) | (93) | (240) |
| I/III | 3—5 | 68.2 | 55.7 | 54.5 | 41.5 |
| | | (88) | (88) | (88) | (258) |
| III/I | 3—5 | 71.1 | 61.2 | 53.6 | 48.2 |
| | | (83) | (85) | (84) | (224) |

*Note:* The numbers in brackets give the total number of choices at referent time employed in the comparison.

Table 6.22. The Constancy of Positive Choices on Different Preference Levels and after Different Time Intervals
(The percentage of retained positive preferences, irrespective of preference level at relatum time; total values for classes 3mf—5mf)

| Preference level | 4-month interval | 9-month interval | 13-month interval |
|---|---|---|---|
| 1st choice | 81.7 | 75.5 | 68.2 |
| 2nd choice | 72.3 | 71.3 | 55.7 |
| 3rd choice | 68.3 | 61.7 | 54.5 |
| 4th choice etc. | 49.7 | 43.5 | 41.5 |

percentages are somewhat lower. Still they are relatively high for the higher preference levels in both classes: 76 % or 79 % of first choices have been retained as positive choices, and 65 % or 75 % of second choices. Also in this comparison the different degrees of stability of different preference levels are clear (in class 3m: 76 %, 65 %, 65 %, 44 %; in class 6f: 79 %, 75 %, 57 %, 48 %).

Tables 6.21—6.24 present the results from percentage calculations in

Table 6.23. The Constancy of Different Preference Levels
(Retained preference level as a percentage of "maximum intensity")
(*MF* Classes)

| Direction of comparison | Grade level | First choice | Second choice | Third choice | Fourth choice etc. |
|---|---|---|---|---|---|
| I/II | 3—8 | 70.4<br>(732) | 43.3<br>(732) | 38.2<br>(728) | 22.3<br>(2152) |
| II/I | 3—8 | 69.2<br>(728) | 45.0<br>(728) | 38.3<br>(728) | 21.7<br>(2208) |
| II/III | 3—5 | 57.2<br>(376) | 41.0<br>(376) | 33.0<br>(376) | 21.7<br>(1140) |
| III/II | 3—5 | 60.1<br>(368) | 42.9<br>(368) | 30.4<br>(372) | 24.3<br>(960) |
| I/III | 3—5 | 49.1<br>(352) | 31.8<br>(352) | 30.1<br>(352) | 19.5<br>(1032) |
| III/I | 3—5 | 51.5<br>(332) | 34.4<br>(340) | 28.6<br>(336) | 23.0<br>(896) |

*Note:* The numbers in brackets give total scores of "maximum intensity" (number of choices at the referent time employed in the comparison, multiplied by 4).

Table 6.24. The Constancy of Negative Choices
(Percentages)

| Grade level | Direction of comparison |  |  |  |  |  |
|---|---|---|---|---|---|---|
|  | I/II | II/I | II/III | III/II | I/III | III/I |
| 3—8mf | 32.2<br>(211) | 24.6<br>(280) | 26.4<br>(197) | 31.5<br>(165) | 21.5<br>(149) | 23.2<br>(138) |

*Note:* For the numbers in brackets, see Table 6.21.

the *MF* Classes. In the two first tables we find percentages of retained positive preferences irrespective of preference level at relatum time; in the next the retained preference level is expressed as a percentage of "maximum intensity"; in the last the percentages of unchanged negative choices are presented. In all cases both the four-month, nine-month, and thirteen-month interval are examined, and prospective as well as retrospective approaches are employed. The three test occasions are symbolized with Roman numerals: I (November, 1952), II (March, 1953), and III (December, 1953). I/II symbolizes a prospective comparison, II/I a retrospective comparison (between the first and the second test

Table 6.25. A Comparison of Two Short-Interval Investigations in the *AB* Classes
The Constancy of Different Preference Levels

| Grade level | First choice | Second choice | Third choice |
|---|---|---|---|
| a. The percentage of retained positive preferences irrespective of preference level at relatum time | | | |
| 4—8 | 92.9 | 86.0 | 71.0 |
| | (280) | (279) | (269) |
| b. The percentage of level-indentical constancies | | | |
| 4—8 | 70.4 | 40.1 | 29.4 |
| | (280) | (279) | (269) |
| c. Retained preference level as a percentage of "maximum intensity" | | | |
| 4—8 | 84.1 | 55.1 | 37.8 |
| | (1120) | (1116) | (1076) |

*Note:* For the numbers in brackets, see Tables 6.21 and 6.23.

occasions). We see that the percentage of retained positive preferences (irrespective of preference level at relatum time) is relatively large for first choices: 86.3 % after a four-month interval, 75.5 % after a nine-month interval, and 68.2 % after a thirteen-month interval (calculated prospectively). No single class has a lower percentage for first-level choices than 59 for a period of more than a year, and a retrospective calculation for the four-month interval gives a percentage of 100 in one class (8mf). In comparison, the percentage of retained negative choices is fairly low (cf. Table 6.24): 32.2 % after the four-month interval, 26.4 % after the nine-month interval, and 21.5 % after the thirteen-month interval. No single class has a higher percentage than 46 for the shortest time interval. From all these tables decreasing series of percentages are seen (almost without exception) on the one hand when comparing higher preference levels with lower preference levels, on the other hand when comparing shorter time intervals with longer. This is perhaps most clearly seen in Table 6.22 which summarizes total percentages for the three classes which were followed up through all three test occasions (3mf—5mf).

Table 6.25 deals with the short-interval investigation in the *AB* Classes Qualitatively identical choices made up 92.9 % on the highest preferenc level, 71.0 % on the lowest.

*Discussion.* In a discussion of vector-theoretical interpretations of interpersonal preferences (Bjerstedt 1953), it was assumed that the levels of preference could be interpreted as representing different degrees of strength in "movement tendencies". Therefore, the higher the preference level, the smaller the probability of intertemporal change. In earlier stability investigations this "preference level hypothesis" has a certain empirical foundation. Our own data, finally, seem to give an unequivocal verification of this assumption. This means also one important reason for considering it correct to differentiate between different degrees of preference in the computations. A first choice is dynamically something different from, something "more than" a second choice, a second choice is something different from, something "more than" a third choice, etc. (cf. *op. cit.*). Also we see that the changes are of a specific character: when a first choice has changed, it has often been transformed into a second choice; when a low-level choice or a rejection has changed, it has most often been transformed into an "indifference" (cf. the tables for class 3m and 6f). We see that the changes are often not abrupt but continuous, which also suggests that the grading of the choice series it not arbitrary.

It may be of interest to compare our findings with those of Johannesson (1954). If we compare his Table 64 (p. 162), which gives stability percentages for different levels of percentages for one five-month interval (III—IV) and one thirteen-month interval (I—II), with our table 6.22, for example, we find the following differences most conspicuous: (a) As a rule Johannesson's percentages are somewhat lower than ours. (b) The general time-interval hypothesis is not verified by Johannesson's data, while our data clearly speaks in favor of this assumption. What may be the cause of these differences? The first discrepancy is probably a result of the difference between our no-effect methods and Johannesson's regrouping (effect) methods; this would then be in concordance with a general "preference effect hypothesis": the less situational variation in terms of regrouping, the greater the test-retest consistency. Perhaps also the second difference may have something to do with the influence of regrouping, but other causes are possible.

### c. *The stability of outgoing choices as influenced by incoming choices*

Predictions of intertemporal development of outgoing choices may not only be founded on their own characteristics (such as in the case of different preference levels), but also on the type of incoming choice. A negative choice directed from $x$ towards $y$, may be given three different types of rejoinder by $y$: a negative ($x\bar{N}y$), an indifferent ($xNIy$), or a positive ($xNPy$). Can the stability of the choice-maker's attitude be considered to be wholly uninfluenced by the attitude of the choice-receiver? This does not seem very probable. Even though the wishes of the choice-receiver do not directly influence the stability of the choice-maker's choice, the attitude of the choice-receiver will probably, sooner or later, in one form or another, enter the psychological field of the choice-maker, and this fact may influence future choice behavior, even if the "percep-

Table 6.26. Reversal of Negative Choices at Different Degrees of Sociodynamic Balance within the Dyad

a) *Definition of Three Dyadic Rejection Patterns:*

| Kind of definition | Pattern number | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| A. 1. Testproximal choice terms | $x$ rejects $y$, and $y$ rejects $x$ | $x$ rejects $y$, and $y$ is indifferent towards $x$ | $x$ rejects $y$, but $y$ chooses $x$ |
| A. 2. Testproximal choice symbols | $x\overline{\overline{N}}y$ | $xNIy$ | $xNPy$ |
| B. 1. Testdistal vector terms (from the point of view of $x$) | One primary force is acting on $x$ in the direction away from $y$, and one secondary force is acting on $x$ in the same direction. | A force is acting on $x$ in the direction away from $y$. | One primary force is acting on $x$ in the direction away from $y$, and one secondary force is acting on $x$ in the opposite direction, which is most simply expressed as a potentially restraining force against $x$'s tendency to move away from $y$. |
| B. 2. Testdistal vector symbols (from the point of view of $x$) | $\overline{\overline{f}}x, -y$ | $fx, -y$ | $(rf)x, -y$ |

For further details of testproximal and testdistal symbolization, cf. above, chap. 3: II.

b) *Empirical Choice Reversals in Retesting* (3mf, 4mf, 5mf):

| Interval | Dyadic pattern | Percentage of choice reversals | Number of rejections |
|---|---|---|---|
| 4 months | 1 | 4.2 | 24 |
| | 2 | 14.0 | 107 |
| | 3 | 22.6 | 31 |
| 9 months | 1 | 4.2 | 24 |
| | 2 | 11.4 | 105 |
| | 3 | 26.5 | 34 |
| 13 months | 1 | 12.5 | 16 |
| | 2 | 23.7 | 76 |
| | 3 | 24.0 | 25 |
| Total | 1 | 6.3 | 64 |
| | 2 | 15.6 | 288 |
| | 3 | 24.4 | 90 |

tion" is not clear enough to result in a "perception"-report in a questionnaire of the "guessing"-type discussed above in chap. 4 ("sub-report level of perception"). On the basis of this general argument and on the test-distal hypotheses in terms of field forces which seem plausible for many cases (cf. Table 6.26, chap. 3: II above, and BJERSTEDT 1953), the following explicit assumptions concerning intertemporal instabilities may be made: A negative choice given a negative reciprocation may be expected to have a greater tendency to be constant than a negative choice met by non-choice or a positive choice, and a negative choice given a positive rejoinder may be expected to have a greater tendency to change than a negative choice met by non-choice. The outgoing rejection is thus expected to be most constant in the first pattern ($x\bar{N}y$), next most constant in the second pattern ($xNIy$), and least constant in the third pattern ($xNPy$). Conversely, the outgoing rejection is expected to change into a positive choice least often in the first pattern, more often in the second, and most often in the third. This last statement is subjected to an empirical test in the second part of Table 6.26. Although they are small, all differences go in the expected direction for all temporal intervals: that is, the lowest percentage of choice reversals is found among the first type of dyadic pattern, a somewhat higher percentage among the second type, and the highest among the third. The four-case stability hypothesis, starting from

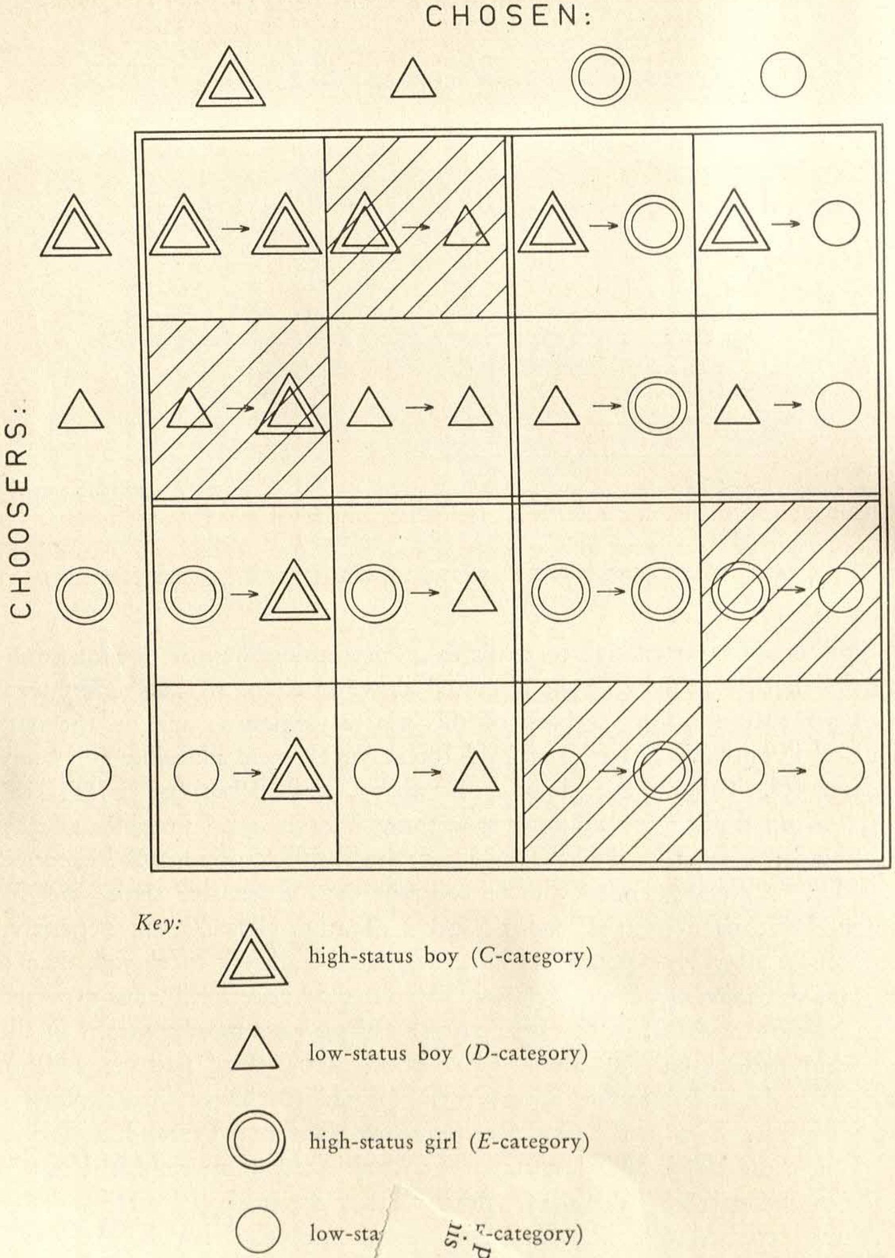

CHOSEN:
CHOOSERS:
Key:
high-status boy (C-category)
low-status boy (D-category)
high-status girl (E-category)
low-sta
-category)

Fig. 6.10. The general structure pe of sociomatrix arrangement in a istal symbo

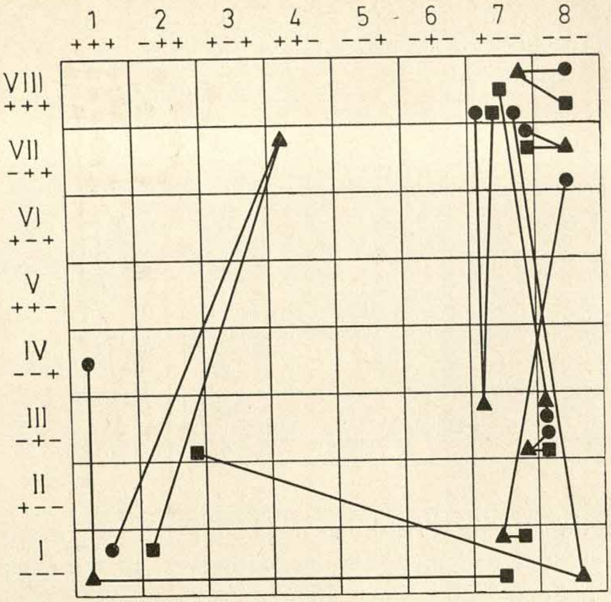
Table 6.27. Stability of Choices from High-Status Pupils to Low-Status Pupils and from Low-Status Pupils to High-Status Pupils

| Classes | Boys | | Girls | |
|---|---|---|---|---|
| | High-to-Low (*CD*) | Low-to-High (*DC*) | High-to-Low (*EF*) | Low-to-High (*FE*) |
| 3mf | 11 | 59 | 24 | 62 |
| 4mf | 63 | 76 | 46 | 70 |
| 5mf | 39 | 62 | 33 | 62 |
| 6mf | 60 | 69 | 71 | 76 |
| 7mf | 67 | 80 | 55 | 84 |
| 8mf | 53 | 95 | 67 | 81 |
| *MF* | *50.6* | *70.1* | *47.1* | *71.4* |

considerations of the relational field, has not been given very much attention within preferential sociometry so far. However, to the extent that it is helpful for predictions of sociopreferential development, it is certainly worth further study.

### d. *Choice stability and the status of choice-maker and choice-receiver*

In order to investigate whether the status of the choice-maker and the status of the choice-receiver influenced the degree of choice stability, the following procedure was adopted. As the reader may remember, the first list of pupils for the primary tabulation of choice data was rearranged systematically in the sociomatrix with respect to the number of positive choices received (cf. chap. 5: I and Table 5.1). The children were given code-names, the initial letter of which indicated both relative status and sex. Thus, in a mixed class we obtain four broad categories of pupils: the *C*-category (whose code-names begin with *C*; high-status boys), the *D*-category (low-status boys), the *E*-category (high-status girls), and the *F*-category (low-status girls). If heavy lines are drawn on the sociomatrix separating these categories both vertically and horizontally, we obtain a 16-field system of the general structure outlined in Figure 6.10. The four fields along the main diagonal represent the areas of in-category choice: high-status boys choosing high-status boys, low-status boys choosing low-status boys, etc. (Choice-maker and choice-receiver having the same symbol in the figure.) The four-cell field to the upper right represents choices from boys to girls, and the four-cell field to the lower left represents



*Key:*

circle: first test
triangle: second test
square: third test

Fig. 6.11. Pattern changes on the "chess-board diagram".
(Class 3mf: *CA—CI*)

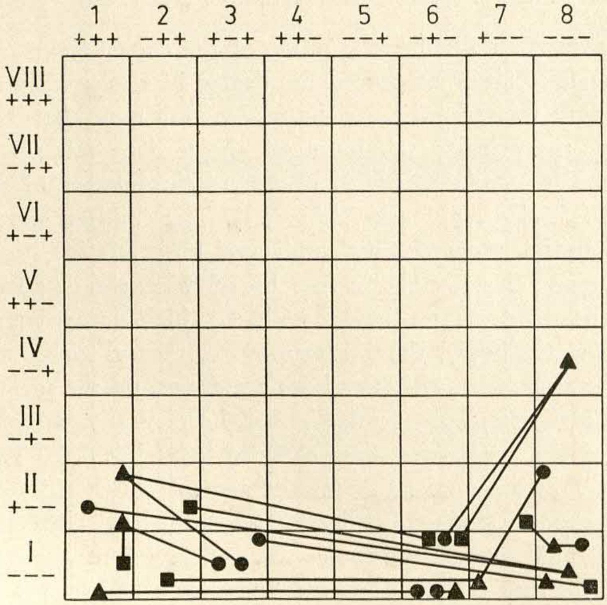


Fig. 6.12. Pattern changes on the "chess-board diagram".
(Class 3mf: *DA—DI*)

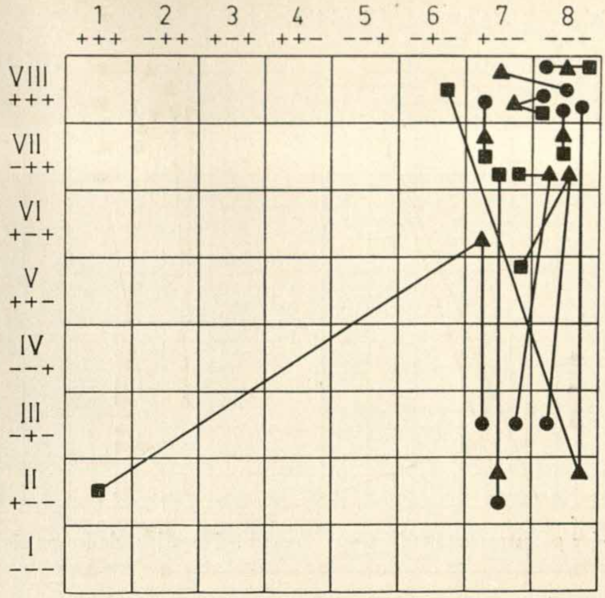


Fig. 6.13. Pattern changes on the "chess-board diagram".
(Class 3mf: *EA—EJ*)

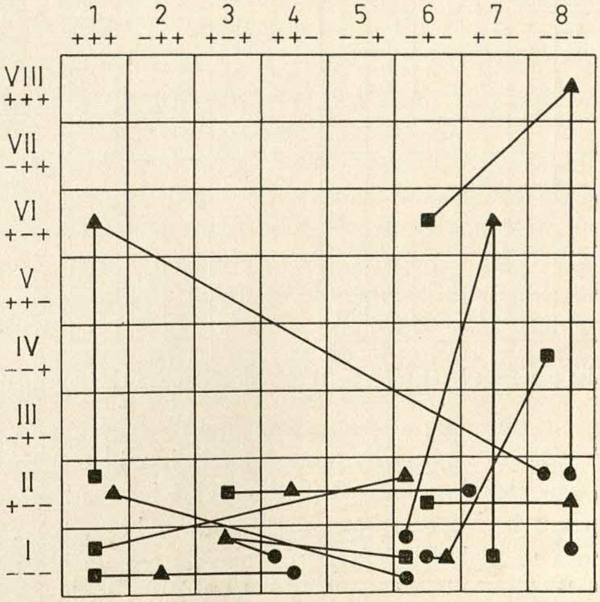


Fig. 6.14. Pattern changes on the "chess-board diagram".
(Class 3mf: *FA—FJ*)

Table 6.28. Changes of Positive and Negative Choice Patterns

Test II

| Test I | VIII +++ | VII −++ | VI +−+ | V ++− | IV −−+ | III −+− | II +−− | I −−− |
|---|---|---|---|---|---|---|---|---|
| VIII +++ | 23 | 6 | 3 | 1 | 2 | 3 | 1 | 2 |
| VII −++ | 10 | 14 | 2 | 1 |  | 2 |  | 5 |
| VI +−+ | 2 |  | 2 |  |  |  | 5 |  |
| V ++− | 1 |  |  |  |  |  | 1 | 2 |
| IV −−+ |  | 2 |  |  | 2 |  |  | 4 |
| III −+− |  | 3 | 1 | 1 |  | 4 |  | 1 |
| II +−− | 2 | 1 | 2 |  |  |  | 18 | 11 |
| I −−− | 1 | 1 | 2 |  | 4 |  | 11 | 24 |

a. Positive choice patterns: I/II (*MF* 3—8)

Test II

| Test I | 1 +++ | 2 −++ | 3 +−+ | 4 ++− | 5 −−+ | 6 −+− | 7 +−− | 8 −−− |
|---|---|---|---|---|---|---|---|---|
| 1 +++ | 5 |  |  | 2 |  | 2 | 1 | 1 |
| 2 −++ | 1 | 1 |  |  |  |  |  |  |
| 3 +−+ | 3 |  |  | 1 |  |  | 1 | 2 |
| 4 ++− | 1 | 3 | 1 | 2 |  |  | 4 |  |
| 5 −−+ |  |  |  |  |  |  |  |  |
| 6 −+− | 6 | 1 | 1 |  |  | 7 | 5 | 4 |
| 7 +−− | 3 | 1 | 1 | 5 |  | 5 | 25 | 9 |
| 8 −−− | 2 |  |  | 6 | 1 | 6 | 15 | 49 |

b. Negative choice patterns: I/II (*MF* 3—8)

Test III

| Test I | VIII +++ | VII −++ | VI +−+ | V ++− | IV −−+ | III −+− | II +−− | I −−− |
|---|---|---|---|---|---|---|---|---|
| VIII +++ | 11 | 8 | 1 |  | 1 | 1 |  |  |
| VII −++ |  | 6 | 1 |  | 1 |  |  | 2 |
| VI +−+ | 1 |  |  |  | 1 |  | 2 |  |
| V ++− | 1 |  |  |  |  |  |  |  |
| IV −−+ |  | 1 |  |  | 2 |  |  | 2 |
| III −+− | 1 | 2 |  | 1 |  | 1 | 1 | 1 |
| II +−− |  | 3 | 3 |  |  | 1 | 6 | 6 |
| I −−− |  | 2 | 1 |  | 1 |  | 4 | 12 |

c. Positive choice patterns: I/III (*MF* 3—5)

Test III

| Test I | 1 +++ | 2 −++ | 3 +−+ | 4 ++− | 5 −−+ | 6 −+− | 7 +−− | 8 −−− |
|---|---|---|---|---|---|---|---|---|
| 1 +++ | 2 | 2 |  |  |  | 2 | 3 |  |
| 2 −++ |  | 2 |  |  |  |  |  |  |
| 3 +−+ | 1 |  |  |  |  | 1 | 2 | 1 |
| 4 ++− | 1 |  |  |  |  | 2 | 1 | 1 |
| 5 −−+ |  |  |  |  |  |  |  |  |
| 6 −+− |  | 2 |  |  |  | 1 | 1 | 3 |
| 7 +−− | 3 | 1 | 3 | 1 | 1 | 1 | 8 | 7 |
| 8 −−− | 2 | 2 | 1 | 1 | 1 | 4 | 10 | 14 |

d. Negative choice patterns: I/III (*MF* 3—5)

choices from girls to boys. The present analysis will concentrate on the remaining four fields (emphasized in the figure by shading) representing (a) choices from high-status boys to low-status boys, (b) choices from low-status boys to high-status boys, (c) choices from high-status girls to low-status girls, (d) choices from low-status girls to high-status girls. For each of these four sub-fields percentages of choice stability were cal-

Table 6.29. The Stability of Positive and Negative Choice Patterns

| Pattern | Interval | Classes | Percentages | | | | Total number of patterns |
|---|---|---|---|---|---|---|---|
| | | | No change | One change | Two changes | Three changes | |
| Positive | 4 months | 3—5mf | 42 | 45 | 9 | 4 | 98 |
| | | 6—8mf | 54 | 31 | 14 | 1 | 85 |
| | | 3—8mf | 48 | 38 | 11 | 3 | 183 |
| | 13 months | 3—5mf | 43 | 41 | 13 | 3 | 88 |
| Negative | 4 months | 3—5mf | 42 | 33 | 22 | 3 | 98 |
| | | 6—8mf | 56 | 26 | 15 | 2 | 85 |
| | | 3—8mf | 49 | 30 | 19 | 3 | 183 |
| | 13 months | 3—5mf | 31 | 45 | 19 | 5 | 88 |

culated for each of the *MF* Classes (percentage of retained positive preferences irrespective of preference level at relatum time, I/II). A survey of the indices obtained is presented in Table 6.27. We see that, without exception, the low-status children obtain higher stability percentages for their choices to high-status children, than do high-status children for their choices to low-status children. Hypothetically, two factors may be thought to contribute to this result. Firstly, stability of choice may partly be a function of the chooser's satisfaction with the choice object; the reason why low-status children are *not* given choices by several classmates may be that they are less satisfactory choice objects, and, analogously, pupils who *have* chosen them may realize this after some time and then withdraw their choice. Secondly, the choices to high-status pupils may partly be directed to prestige-centers without realistic assessment on a mutual basis. In an environment where there are few factors inducing to interaction between all the members of the group (as was the case with the *MF* Classes), such attitudes, perhaps combined with an unfounded expectation of reciprocation, may continue undisturbed for a long time, while relations based on a more realistic individual-to-individual interaction may be more exposed to disturbances. The problem concerning the degree of realism in choice expectations in relation to choice status will be further considered and examined empirically in chap. 7.

## 4. Changes of Positive and Negative Choice Patterns

The stability of positive and negative choice patterns is demonstrated in Figures 6.11—6.14 and Tables 6.28 and 6.29. The four figures show the pattern stability of the four status categories *C*, *D*, *E*, and *F* in Class 3mf. The position at the first test occasion is symbolized by a circle, at the second by a triangle, and at the third by a square, and the three symbols for one individual have been connected with a line. Although there are many changes (which of course is to be expected over more than a year), nevertheless, they do not as a rule involve drastic revisions, which is seen from the fact that the high-status individuals in most cases retain their relative position in the left columns, and the low-status individuals retain theirs in the lower rows of the diagram. After thirteen months in the *MF* Classes 3—5, the positive choice patterns are wholly retained in 43 % of the cases, changed in one factor in 41 %, and in two factors in 13 %. Only in 3 % of the cases have all three factors changed.

From Table 6.28 we find that the most frequent patterns are often also the least often changed (a finding comparable to that of JENNINGS 1950, p. 102). Thus, patterns III—VI and 3—6 with their less "natural" combinations may with a certain right be characterized as *instability-inducing*, and the others as *stability-inducing*.

## CHAPTER 7

# REPORTS OF CHOICE EXPECTATION AND CHOICE MOTIVES

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## I. INTRODUCTION

Research on the expectation (estimation, or loosely: "perception"[1]) of sociopreferential relations is of course of the utmost importance when wishing to clarify the interpretative assumptions often connected with the concept of sociometric choice status. By proceeding from the study of the outer social surroundings to the "preferential" surroundings depicted in a sociogram, we gain a more intimate picture of the social world of the individual, which means that his behavior may be better explained in some instances than it could otherwise. But still we have not reached the surroundings as immediately experienced by the subject (his "personal world", or his "relevant region"; cf., e. g., JAMES 1890, vol. II, p. 291 et seq.; MURPHY 1947, p. 331 et seq.; KLEIN 1951, p. 328 et seq.; SMITH 1952, p. 16 et seq.). In a sociogram the personal relevance of choices *given* is obvious, but the significance of choices *received* is still obscure. It seems as if we obtain an incomplete picture in many studies of social relations, if we do not proceed a step further and ask: to what degree are the informal preferences expected, to what degree are they "felt" by the receivers? Are the most chosen aware of their position; do they know who their supporters are? Are the rejected conscious of their position; do they recognize their antagonists? In general, do people know who choose them and who reject them, that is, do we find a correspondence between choice reception and choice expectation? If the correspondence is complete or nearly so, the usual sociogram may be considered to describe adequately the personally relevant social surroundings. But as soon as the correspondence is faulty, we have to go further and try to find out the subject's *own* picture of the surroundings, his *own* sociogram. It seems to be important not only to investigate the *correspondences between interpersonal preferences and the subjective "estimation" of these preferences* in order to get an idea of the degree of accuracy, but especially to investigate other possible *factors connected with variation in the accuracy* of these expectations. Such investigations are both of primary importance in a critical scrutiny of the assumptions for the conventional method of directly interpreting sociopreferential data and of general interest as contributions to the research field of "perception-personality".

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[1] We use inverted commas around "perception" in this connection to denote that the word is used (as is usually the case when speaking of "social perception") in a very broad sense "to include inferences, and remembered stimuli, not necessarily present in sensation at the moment" (Tagiuri 1952, p. 91).

This need for research into different aspects of "social perception" seems to have been increasingly realized. MURPHY notices a "strong trend in recent years to lift the problems of social psychology from the behavior level to the level of awareness of social reality" (1953, p. 139), and the concept of "social perception" is now often given special sections in surveys of social psychology (cf., e. g., NEWCOMB 1954, FESTINGER 1955, HARE, BORGATTA, & BALES 1955). Two traditional areas of research fall within this general field of interest: the recognition of emotions in others and the judgment of personality (cf., e. g., the survey by BRUNER & TAGIURI 1954). Within the more limited field of sociopreferential research, we note the *Selbstwertung* experiments undertaken in some early investigations of social ranking, where the pupils are sometimes instructed to include their own names in their ranking list of suitable leaders in the classroom in the position where "they guess that their classmates have placed them" (KAILA 1935, p. 255; for different approaches to "Selbstwertung", cf., e. g., REININGER 1924, KOSKENNIEMI 1936, GÄSTRIN 1938, TUOMPO 1942, JOHANNESSON 1954). A proposal by MORENO in 1942 widens the field also to include the subject's estimation of what other *specific* people feel about himself ("sociometric selfrating", later called "sociometric perception test", MORENO 1953, p. 325). Empirical investigations of this later kind were infrequent for many years. MAUCORPS (1949), however, investigated the awareness of "reciprocations", and TAGIURI (1952) employed the more general method of asking the subjects to guess from the total preference area rather than from the limited field of the already chosen. In recent years research on various kinds of "perception" in various kinds of sociopreferential situations has been given increased attention (cf., e. g., SINGER 1951, AUSUBEL, SCHIFF, & GASSER 1952, CHOWDRY & NEWCOMB 1952, GOODNOW & TAGIURI 1952, RILEY 1952, YABLONSKY 1952, GAGE & EXLINE 1953, SCHIFF 1953, TAGIURI, BLAKE, & BRUNER 1953, BORGATTA 1954, HUSQUINET 1954, RILEY, COHN, TOBY, & RILEY 1954, TAYLOR 1954/55, AUSUBEL 1955, AUSUBEL & SCHIFF 1955, GOTTHEIL 1955, GRONLUND 1955).

Sociopreferential research with a "perceptual" approach may direct its attention towards many different types of phenomena. No attempt will be made to give a complete enumeration, but the following survey shows some of the possible fields:

I. *The subject's estimation of himself as a chooser,*
for example, his estimation of his own
   1. choice wishes,
   2. motives for choosing others,
   3. value in a status rank according to his own opinion.

II. *The subject's estimation of himself as chosen,*
for example, his estimation of
   1. choices received from others,
   2. motives of others for choosing the subject,
   3. his own choice status as determined by a total group.

III. *The subject's estimation of choice relations unrelated to himself*[2],
for example, his estimation of

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[2] For some purposes it should be suitable to subdivide this category again into two: The subject's estimation of others as choosers, and the subject's estimation of others as chosen.

1. choices between other specific individuals,
2. motives of others for choosing other specific individuals,
3. the choice status of other specific individuals as determined by a total group.

Besides the main classification, we observe in this survey a sub-classification: estimation of single individual-individual preferences, estimation of motives for these preferences, and estimation of the most conspicuous relational summary: choice status as defined by the number of choices received.

Among these nine fields, one has already been discussed, viz. the subject's estimation of his own preferences (although as a rule we have approached this topic in terms of choice behavior rather than in terms of "perception" of preferential orientation). It would have involved us too much, we felt, to investigate all the other areas in connection with the present question. We therefore selected the following three:

I. the subject's estimation of choices received from others,
II. the subject's estimation of the choice status of other specific individuals as determined by a total group,
III. the subject's estimation of his own motives for choosing others.

These topics are all of direct interest to us, and, as is seen, by choosing thus we have exemplified all three main categories as well as all three sub-categories in the survey discussed.

## II. ESTIMATING CHOICE RECEPTION AND CHOICE STATUS

The method employed for investigating the subject's *estimation of choices received* from others was a guessing technique similar to that of TAGIURI (1952). In the questionnaire (Questionnaire II, presented above, chap. 4) the subject is simply instructed to guess (after the ordinary workmate choosing is finished) who — if any — would like to have him in his (her, their) work group(s) as well as who would *not* like to have him in his (her, their) work group(s). Whilst these questions deal with the estimation of individual-individual preferences, the last question of Questionnaire II deals with *estimation of choice status.* Here the subjects have the possibility of guessing which five boys and which five girls have received most positive votes in the class.

The single *p*-guesses and *n*-guesses were placed on the same sociomatrices as the workmate choices to which the guesses referred, in order that the estimations should be easily comparable with the actual choice data. In order to facilitate these comparisons further, each specific guess was symbolized twice: once in the row and once in the column of the guess-maker (with different symbols). This done, the correspondence or lack of correspondence both with outgoing and incoming choices was easily seen straight from the matrix.

## 1. Data Survey

### A. *Guessed choice reception, outgoing and incoming choices of the guess-maker, and choice intensity*

Tables 7.1—7.2 give a picture of the subject's expectation of being chosen in relation to his outgoing and incoming positive selections (values are given only for the total population used and for total class series). The figures in Table 7.1 represent percentages of *outgoing positive choices* corresponding to positive guesses made, negative guesses made and no guess made. Among positive first choices, no less than 71 % are accompanied by the expectation of a positive reciprocation. In 28 % of the cases the chooser has abstained from guessing, and in 2 % the chooser expects to receive a negative choice. A quite different picture is given when we look at low-level choices (fourth choices, etc.). Only 20 % are accompanied by the expectation of being positively reciprocated, in as many as 74 % of the cases the chooser has abstained from guessing anything, and in 7 % he expects a negative rejoinder. The figures in Table 7.2 represent percentages of *incoming positive choices* corresponding to different kinds of guesses. Whereas the analysis just mentioned gives information about the degree to which the subject's positive choices were given to people from whom he expected a positive reciprocation, the analysis in Table 7.2 informs us of the degree to which the subject's incoming positive choices were received from those very people he expected to receive them from. Incoming first choices were accurately estimated in 62 % of the cases and were wrongly estimated in 2 % of the cases; in the remaining 36 % no guess was made. Even in this case low-level choices give a quite different impression: only 17 % were correctly estimated, 9 % were wrongly estimated, and the number of abstentions had gone up to 74 %.

### B. *Guessed choice reception and preference sign*

The tables just discussed should be compared with Table 7.3 which gives a survey of the subject's expectation of being chosen in relation to

Table 7.1. The Subject's Expectancy of Being Chosen *v.* His Outgoing Positive Selections

(The percentage of $p$ on different choice levels corresponding to $\acute{p}$, $\acute{\imath}$, and $\acute{n}$)

| | Classes | First choice | Second choice | Third choice | Fourth choice, etc. |
|---|---|---|---|---|---|
| Positive | *MF* | 77 | 63 | 47 | 29 |
| guess | *AB* | 67 | 49 | 37 | 13 |
| made | Total | *71* | *54* | *40* | *20* |
| No | *MF* | 19 | 34 | 51 | 64 |
| guess | *AB* | 32 | 49 | 59 | 81 |
| made | Total | *28* | *44* | *56* | *74* |
| Negative | *MF* | 3 | 3 | 3 | 7 |
| guess | *AB* | 1 | 2 | 4 | 6 |
| made | Total | *2* | *2* | *3* | *7* |
| Total | *MF* | 195 | 195 | 195 | 581 |
| number | *AB* | 353 | 350 | 350 | 748 |
| of choices | Total | *548* | *545* | *545* | *1329* |

Table 7.2. The Subject's Expectancy of Being Chosen *v.* His Incoming Positive Selections

(The percentage of $\bar{p}$ on different choice levels corresponding to $\acute{p}$, $\acute{\imath}$, and $\acute{n}$)

| | Classes | First choice | Second choice | Third choice | Fourth choice, etc. |
|---|---|---|---|---|---|
| Positive | *MF* | 61 | 46 | 33 | 25 |
| guess | *AB* | 63 | 43 | 30 | 11 |
| made | Total | *62* | *44* | *31* | *17* |
| No | *MF* | 39 | 51 | 58 | 65 |
| guess | *AB* | 34 | 54 | 66 | 81 |
| made | Total | *36* | *53* | *63* | *74* |
| Negative | *MF* | 1 | 4 | 9 | 10 |
| guess | *AB* | 3 | 3 | 4 | 8 |
| made | Total | *2* | *3* | *6* | *9* |
| Total | *MF* | 195 | 195 | 195 | 581 |
| number | *AB* | 353 | 350 | 350 | 748 |
| of choices | Total | *548* | *545* | *545* | *1329* |

Table 7.3. The Subject's Expectancy of Being Chosen *v.* His Outgoing and Incoming Negative Selections

(The percentage of $n$ or $\bar{n}$ corresponding to $\acute{p}$, $i$, and $\acute{n}$)

| | Classes | Outgoing ($n$) | Incoming ($\bar{n}$) |
|---|---|---|---|
| Positive guess made | *MF* | 5 | 10 |
| | *AB* | 1 | 3 |
| | Total | *3* | *6* |
| No guess made | *MF* | 47 | 67 |
| | *AB* | 63 | 84 |
| | Total | *58* | *78* |
| Negative guess made | *MF* | 48 | 22 |
| | *AB* | 35 | 12 |
| | Total | *40* | *16* |
| Total number of rejections | *MF* | 307 | 307 |
| | *AB* | 567 | 567 |
| | Total | *874* | *874* |

his outgoing and incoming *negative* selections. We find that 40 % of the outgoing rejections are accompanied by the guess of a negative reciprocation, while only 16 % of rejections received are reported as expected. — All the percentages so far mentioned in this connection have been calculated starting from the selections, that is to say, we have considered the question: how many of the choices (positive or negative, outgoing or incoming) are accompanied by an expectation report? As the number of guesses and the number of choices are not the same, it may be of interest to reverse the question and ask: how many of the guesses correspond to choices? We will now consider these two types of question and answer them with respect to the total population used and for each of the four possible comparisons. (1a) Of the *outgoing positive* choices, how many go to individuals from whom the subject expects to receive a positive reciprocation? Formula[3]: $\frac{Sp\acute{p}}{Sp}$. Answer: 39.1 % (or 1161 out of 2967). (1b) Of the positive guesses, how many go to individuals to whom the subject gives positive choices himself? Formula: $\frac{Sp\acute{p}}{S\acute{p}}$. Answer: 81.4 % (or 1161 out of 1427). (2a) Of the *incoming positive* choices, how many are expected? Formula: $\frac{S\bar{p}\acute{p}}{S\bar{p}}$. Answer: 32.9 % (or 977 out of 2967). (2b) Of the positive guesses, how many refer to individuals from whom positive choices are actually received? Formula: $\frac{S\bar{p}\acute{p}}{S\acute{p}}$. Answer: 68.5 % (or 977 out of 1427). (3a) Of the *outgoing negative* choices, how many go to individuals from whom the subject expects to receive a negative reciprocation? Formula: $\frac{Sn\acute{n}}{Sn}$. Answer: 39.6 % (or 346 out of 874). (3b) Of the negative guesses, how many go to individuals to whom the subject gives negative choices himself? Formula: $\frac{Sn\acute{n}}{S\acute{n}}$. Answer: 31.9 % (or 346 out of 1086). (4a) Of the *incoming negative* choices, how many are expected? Formula: $\frac{S\bar{n}\acute{n}}{S\bar{n}}$. Answer: 15.9 % (or 139 out of 874). (4b) Of the negative guesses, how many refer to individuals from whom negative choices are actually received? Formula: $\frac{S\bar{n}\acute{n}}{S\acute{n}}$. Answer: 12.8 % (or 139 out of 1086). From this survey and from the graphical clarification in Figure 7.1, we find among other things: (a) that negative guesses are less common than positive guesses, (b) that, however, the difference between positive and negative guesses is far less than the difference between positive and negative choices, (c) that the number of positive guesses is far lower than the number of positive choices (in fact, the subjects made less than half as many positive guesses as positive choices), whereas, on the other hand, the number of negative guesses is somewhat higher than the number of negative choices, (d) that the proportion of positive guesses corresponding to outgoing positive choices is greater than the proportion of negative guesses corresponding to outgoing negative choices, and (e) that, similarly, the proportion of positive guesses corresponding to incoming positive choices is greater than the proportion of negative guesses corresponding to incoming negative choices (in fact, the percentage of accurate negative estimations is remarkably low).

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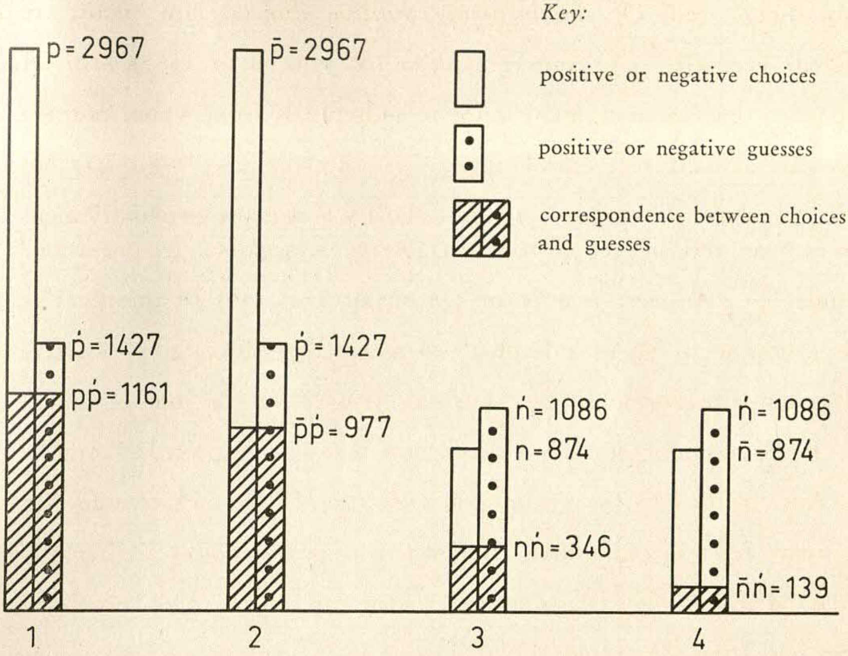
[3] For the symbols used in the formulae, cf. Tables 3.3 and 3.4 as well as the discussion chap. 3: IV: 2.

### C. *Guessed choice reception and the status of choice-maker and choice-receiver*

In order to investigate whether the status of the choice-maker and the status of the choice-receiver influenced the degree of correspondence be-



1 = Outgoing positive choices compared with positive guesses
2 = Incoming positive choices compared with positive guesses
3 = Outgoing negative choices compared with negative guesses
4 = Incoming negative choices compared with negative guesses
(for the meaning of the letter symbols, cf. Tables 3.3 and 3.4)

Fig. 7.1. Guessed choice reception and preference sign.

tween guesses on the one hand and outgoing and incoming choices on the other, the following procedure was adopted (cf. a similar procedure in Riley, Cohn, Toby, & Riley 1954). For the analysis we selected the four fields of the sociomatrix which were emphasized in Figure 6.10 above by shading, viz. those representing choices from high-status boys to low-status boys, choices from low-status boys to high-status boys, choices from high-status girls to low-status girls, and choices from low-status girls to high-status girls. For each of these four sub-fields two indices were calculated in each class: one giving the correspondence between guessed positive choice reception and the guess-maker's outgoing positive choices (for-

Table 7.4. Index of Conformity between Guessed Positive Choice Reception and the Guess-Maker's Outgoing Positive Choices in High-to-Low and Low-to-High Subject Categories

(General formula: $\frac{Sp\acute{p}}{Sp}$)

| Class | Subject categories | | | |
|---|---|---|---|---|
| | Boys | | Girls | |
| | High-to-Low *(CD)* | Low-to-High *(DC)* | High-to-Low *(EF)* | Low-to-High *(FE)* |
| 3mf | 40 | 38 | 50 | 28 |
| 3a | 63 | 47 | 15 | 29 |
| 3b | 38 | 27 | 40 | 40 |
| 4mf | 56 | 53 | 70 | 45 |
| 4a | 46 | 23 | 42 | 24 |
| 4b | 75 | 0 | 75 | 24 |
| 5mf | 56 | 42 | 17 | 21 |
| 5a | 50 | 31 | 60 | 38 |
| 5b | 20 | 35 | 38 | 19 |
| 6mf | 54 | 36 | 60 | 31 |
| 6a | 40 | 22 | 63 | 40 |
| 6b | 86 | 38 | 63 | 29 |
| 7mf | 50 | 46 | 60 | 52 |
| 7a | 23 | 52 | 30 | 8 |
| 7b | 11 | 16 | 25 | 17 |
| 8mf | 36 | 48 | 40 | 21 |
| 8a | 20 | 18 | 38 | 33 |
| 8b | 0 | 33 | 40 | 16 |
| *M* | 42.4 | 33.6 | 45.9 | 28.6 |
| Number of classes | | | | |
| $H/L > L/H$ | 13 | | 15 | |
| $H/L \leq L/H$ | 5 | | 3 | |

mula: $\left.\frac{Sp\acute{p}}{Sp}\right)$, the other giving the correspondence between guessed positive choice reception and actual positive choice reception $\left(\text{formula: } \frac{S\bar{p}\acute{p}}{S\bar{p}}\right)$. A survey of the indices obtained is presented in Tables 7.4—7.5.

It is seen that, as a rule, both kinds of indices have higher values in the

Table 7.5. Index of Conformity between Guessed Positive Choice Reception and Actual Positive Choice Reception in High-to-Low and Low-to-High Subject Categories

(General formula: $\frac{S\bar{p}\acute{p}}{S\bar{p}}$)

| Class | Subject categories | | | |
|---|---|---|---|---|
| | Boys | | Girls | |
| | High-to-Low (*CD*) | Low-to-High (*DC*) | High-to-Low (*EF*) | Low-to-High (*FE*) |
| 3mf | 40 | 19 | 50 | 11 |
| 3a | 50 | 47 | 23 | 5 |
| 3b | 38 | 17 | 60 | 24 |
| 4mf | 50 | 44 | 55 | 33 |
| 4a | 46 | 19 | 33 | 26 |
| 4b | 0 | 13 | 50 | 21 |
| 5mf | 44 | 21 | 33 | 7 |
| 5a | 50 | 19 | 60 | 38 |
| 5b | 47 | 9 | 63 | 19 |
| 6mf | 65 | 30 | 33 | 31 |
| 6a | 30 | 28 | 63 | 25 |
| 6b | 71 | 29 | 63 | 17 |
| 7mf | 50 | 18 | 70 | 21 |
| 7a | 38 | 24 | 20 | 16 |
| 7b | 33 | 5 | 33 | 13 |
| 8mf | 50 | 29 | 20 | 26 |
| 8a | 20 | 18 | 46 | 29 |
| 8b | 0 | 0 | 30 | 21 |
| *M* | 40.1 | 21.6 | 44.7 | 21.3 |
| Number of classes | | | | |
| $H/L > L/H$ | 16 | | 17 | |
| $H/L \leqq L/H$ | 2 | | 1 | |

fields where high-status pupils (boys or girls) choose low-status pupils than in the fields where low-status pupils choose high-status pupils. This was the case in 28 out of the 36 comparisons dealing with outgoing choices (the difference from an 18 : 18 hypothesis being significant, $P < .05$), and in 33 out of the 36 comparisons dealing with incoming choices (the difference from an 18 : 18 hypothesis being highly significant, $P < .001$).

Table 7.6. Incorrect Estimation in Different Classes

| Classes | Number of negative choices incorrectly guessed to be positive | Number of negative choices received | Percentage of negative choices incorrectly guessed to be positive |
|---|---|---|---|
| *MF* | 32 | 307 | 10.4 |
| *AB* | 18 | 567 | 3.2 |
| Total | 50 | 874 | 5.7 |

### D. *Guessed choice reception and school class*

The degree of awareness concerning incoming choices fluctuates somewhat from one class to another. A more systematic difference is demonstrated in Table 7.6 which shows that the percentage of negative choices which are incorrectly guessed to be positive tends to be greater in the *MF* Classes than in the *AB* Classes. When considering the number of *individuals* with one or several negative choices incorrectly guessed to be positive in relation to the number of individuals with one or several negative choices received, we obtain 26.0 % in the *MF* Classes *v.* only 6.6 % in the *AB* Classes ($P < .001$).

### E. *Guessed choice reception and the sex of choice-maker and choice-receiver*

Tables 7.7 and 7.8 give some data illustrating "perception" reports as related to the sex of the choice-maker and the choice-receiver. The degree of correct guessing when the guesser concentrates on his own sex is found to be clearly higher than when he goes to the opposite sex. The accuracy percentage is 35.0 for intra-sexual positive choices, but only 1.6 for positive choices to the opposite sex.

In Questionnaire IV: d the pupils had the possibility of reporting *actual co-being* during the recess. It is interesting to observe that the inter-sexual co-being reports showed far less mutuality than did the intra-sexual ones (Table 7.8). For contact reports concentrating on the guesser's own sex the mutuality percentage was 48 as against 0 for reports concerning contacts with the opposite sex.

### F. *Guessing choice status*

Finally, Tables 7.9 and 7.10 illustrate the analysis of data concerning guesses about choice status. Each pupil was instructed to guess which five

Table 7.7. "Sex Barrier" in Guessing: The Degree of Correct Guessing within and outside the Guess-Maker's Sex (*MF* Classes and *AB* Classes)

| | Within the sex | To the opposite sex | Total |
|---|---|---|---|
| Total number of positive choices | 2784 | 183 | 2967 |
| Positive choices correctly guessed | 974 | 3 | 977 |
| Accuracy percentage | 35.0 | 1.6 | 32.9 |

Table 7.8. "Sex Barrier" in Reports concerning Actual Co-Being: Lacking Mutuality in Defining an Unstructured Situation (*AB* Classes)

| | Within the sex | To the opposite sex | Total |
|---|---|---|---|
| Total number of contacts reported | 603 | 33 | 636 |
| Number of mutualities | 290 | 0 | 290 |
| Mutuality percentage | 48.1 | 0 | 45.6 |

boys and which five girls had received the largest number of votes. These guesses were added together to form a status score of "guesses received" for each individual, and then a weighting from five points for a "first guess" to one point for a "fifth guess" was employed. The status score derived from guesses was then compared with the status scores derived from preferences. A correlation gives positive and fairly high coefficients (Table 7.9).

In Table 7.10, the guessing of choice status is analyzed in another way. From the matrices we picked out all the boys and girls with a first position (*CA* and *EA*, cf. chap. 5 above) as well as all the boys and girls with a last position (last *D* and last *F*) in the eighteen mixed classes. For each pupil the number of correct guesses and the number of abstentions (no guess) were listed, and a guess was considered correct if the boy (or girl) mentioned was among the five most chosen (irrespective of whether he or she held the exact rank given). As, in fact, no pupil among those dealt with here listed himself, it was considered proper to consider the guess correct for

Table 7.9. Positive Choices Received and Estimated Status

| Class | *N* | *r* | Class | *N* | *r* | Class | *N* | *r* |
|---|---|---|---|---|---|---|---|---|
| 3mf | 38 | .89 | 3a | 31 | .66 | 3b | 28 | .75 |
| 4mf | 34 | .89 | 4a | 31 | .76 | 4b | 32 | .92 |
| 5mf | 32 | .62 | 5a | 31 | .77 | 5b | 32 | .77 |
| 6mf | 37 | .69 | 6a | 27 | .80 | 6b | 31 | .51 |
| 7mf | 30 | .84 | 7a | 30 | .48 | 7b | 29 | .47 |
| 8mf | 24 | .74 | 8a | 30 | .63 | 8b | 21 | .54 |

Table 7.10. Guessing Choice Status: High-Status Pupils, Low-Status Pupils, and Teachers as Guess-Makers

| Guess-maker | | Guesses concerning boys | | Guesses concerning girls | |
|---|---|---|---|---|---|
| Category | Sex | Mean number of correct guesses | Mean number of abstentions | Mean number of correct guesses | Mean number of abstentions |
| High Pupil | M | 3.50 | 0.11 | 2.50 | 0.89 |
| | F | 3.11 | 0.39 | 2.83 | 0.44 |
| Low Pupil | M | 2.78 | 0.83 | 2.28 | 0.94 |
| | F | 2.33 | 0.89 | 2.83 | 0.83 |
| Teacher | M+F | 4.00 | 0.50 | 2.83 | 0.67 |

the high-status pupils if their mentions were included among the five most chosen after their own name was eliminated. In the *MF* Classes the teachers were instructed to make the same guess as the pupils. Table 7.10 shows (a) that the mean number of correct guesses in no category was as low as two and in no case higher than four, (b) that the number of abstentions was fairly low, in no case reaching 1.0, (c) that the teachers were as good as or better than the pupils in this guessing, (d) that (with one exception only) the pupils tended to give slightly more correct guesses concerning their own sex than concerning the opposite sex, and (e) that (with one exception only) the high-status pupils tended to give slightly more correct guesses than the corresponding low-status pupils.

## 2. Discussion

The guessing behavior of the pupils was found to vary according to at least the five following factors: (a) the preference level, (b) the preference sign, (c) the status of the individuals involved, (d) the co-being experience of the individuals involved, and (e) the sex of the individuals involved.

MORENO has repeatedly pointed out that the trend towards positive reciprocation which is far above chance expectation may be a sign of interpersonal sensitivity (1934, p. 158 et seq.; 1953, p. 311 et seq.). Thus the degree of reciprocation has sometimes been used as a measure of social awareness. DEUTSCHBERGER (1947), for example, employed this approach and showed that the frequency of reciprocation was greater on the higher levels of choice than on the lower levels. However, this measure of awareness is necessarily *indirect*; we cannot be sure that a specific subject really is aware of the reciprocation. It is therefore interesting to observe that a more *direct* approach to the problem of preference level and awareness, like the one employed in this chapter, gives the same differentiation between high-level and low-level choice intensities. It seems appropriate to distinguish within the field of preferences between different areas of awareness correlated with different levels of preference intensities and like DEUTSCHBERGER (*ibid.*) to describe the low-level range, with LEWIN's term, as a "cognitively undetermined region" (cf. LEWIN 1936 a, p. 130 et seq.). This fact serves to remind us once again that it is *not* meaningless or artificial to retain different preference levels in the analysis.

The inquiry into guessing behavior in the case of different preference signs showed the number of rejection reports to be lower than the number of rejection guesses and, conversely, the number of positive guesses to be lower than the number of positive choice reports. It is possible to explain these proportions by assuming a resistance both against rejection reports and against positive guesses, due to an unwillingness among many of our pupils to speak badly about others and well about themselves. It is interesting to observe that the markedly low accuracy with respect to rejection guesses is *not* due to resistance against making such reports. Rather, these guesses are made in what appears to be a hit-or-miss manner. This may be due to some kind of "perceptual barrier" against awareness of incoming rejection or due to the fact that the choice-sender tries to conceal his negative attitude better than his positive attitude. From the present data it is not possible to decide which of these explanations is the most often applicable; one can also imagine other causes.

Although positive preferences are often found together with the expectation of positive reciprocation, we find interesting status differences: when high-status pupils choose low-status pupils, they more often expect reciprocation than do low-status pupils when choosing high-status pupils. This may be rooted in the fact that the pupil has a certain awareness of his own status, and — consequently — the high-status individual is more confident of being the center of positive choices than is the low-status individual. Further, high-status pupils are better aware of positive choices received from low-status pupils than are low-status pupils of choices received from high-status pupils. This may be due to the circumstance that "downward-directed" guesses most often represent real experience of a dyadic relation, whereas "upward-directed" guesses often reflect wishful expectations.

The fact that correct guesses with respect to negative choosing were more frequent in the *AB* Classes than in the *MF* Classes may be due to differences in co-being experience in the school situation. It is not surprising that children used to group work in class are better aware of the attitudes of the others than are children who lack such experience.

It is not only true that intersexual choosing is infrequent. In addition, the intersexual choosing that exists is very poorly experienced according to the guesses. Hence, we can speak not only of a "sociopreferential sex barrier", but also of a "socioperceptual sex barrier". As has been stressed in the discussion of projective tests like the Rorschach, the *TAT*, or the Wartegg, unstructured stimulus complexes are especially well suited to reveal individual-determined reactions of a non-intersubjective character. If we use a sufficiently unstructured aspect, it is possible to demonstrate this socioperceptual sex barrier not only in guessing situations of latent preferences, but also in reports of manifest and recent co-being. The "being together during the recess" is the sort of aspect which it is possible to interpret very freely (standing near, exchanging a word with) or narrowly (being in constant interaction with) as one wishes. If a specifically structured aspect had been used — and no presses to deviate from the truth had existed — a 100 % mutuality should have been the result of questions of actual co-action. In the present case we find only 45.6 % mutuality as a natural consequence of the vagueness. In this unstructured case, there is a possibility for the sex barrier norm to reveal itself, which leads to the rather amusing finding of 0 % mutuality for intersexual co-beings; that is, in no case did the classmate (of the opposite sex) pointed to as the partner in recent co-being confirm this in his own report.

With respect to guesses referring to choice status, it is natural, from the trends already discussed, to find slight tendencies to greater accuracy for estimations within the guesser's sex and for reports from high-status individuals. More surprising are, perhaps, the good results of the teacher guesses which are at variance with the popular idea of the pupil world of preferences hidden to the teacher. The specific kind of choice aspect used and the fact that only extreme positions are dealt with may have made the guessing easier than would otherwise have been the case (cf. GRONLUND 1950, p. 331—333).

## III REPORTING CHOICE MOTIVES

### 1. Introductory Comments: Classification Procedure and Inter-Classifier Agreement

General considerations about the difficulties in the analysis of choice motivations were given above (chap. 2: X). It was concluded that although we cannot always rely on a direct "text interpretation", we may perhaps make some use of prudent "context interpretation". This could be more directly formulated thus: we cannot expect to obtain detailed knowledge of actual causes, but we may get some idea of the social world of the pupils as subjectively experienced and of the specific values and norms prevailing in the groups under study. In our specific case we may form tentative ideas of the most important extra-sociopreferential correlates to sociometric choice status. A study of the choice motivations of the children is then an adequate pre-study to the more intensive analysis of individuals with extreme status-values which is to follow in Part III.

The choice motivations were written by the children in direct connection with their positive and negative workmate choices as well as with their choices for leader of the work group (cf. Questionnaire I, chap. 4). As examples of investigations which have tried to classify preference motivations, we mentioned above those of THOMAS & YOUNG (1938) and BONNEY (1947). In the first of these the verbal expressions are treated as more or less separate units, so that only identical or nearly identical expressions are placed in one category. Although each of these approaches may have its merits for some purposes, they are not quite adequate in the present connection. In the first case, comparisons between different subpopulations are hampered by the unavoidable insurveyability of the resulting frequency tables, in the second case, by the possibility of placing a specific motivation in several categories. Hence, in the present survey of motivations we will use an intermediate method. On the one hand (contrary to the method which has been exemplified here by the study of THOMAS & YOUNG) we shall use relatively inclusive categories in considering the motivations. On the other hand (contrary to the method used by BONNEY, for example) we will treat the verbal expression of a motivation as a unit in the specific sense that we do not place it within more than one category. Therefore the categories must be made sufficiently clearly separated from each other so that the procedure of classification will not cause too many difficulties.

Hitherto we have used the word "motivation" in a fairly general way. In connection with this study, it may be used in one wide sense: a pupil's motivation of a choice, or in one narrower sense: as when speaking of different motivations of the same choice. When it is important to avoid ambiguity we will use the words "*total motivation*" (*TM*) and "*unit of motivation*" (*UM*) for these two concepts. In one *TM*, i. e., everything the child has to say about the reason for one of his choices, there could be one *UM* or several *UM*'s.

The *classification procedure* which we followed will be described briefly. The total material on choice motivations was read through by myself and vertical lines were inserted within the *TM*'s to separate what appeared to be different *UM*'s. Of course, the various *UM*'s were often intimately related, but, by following the principle of always separating linguistically differentiated expressions which were not identical in meaning, and considering them as different *UM*'s, doubtful cases were reduced to a minimum. During and after this reading, I made up a list of categories, which, after a series of revisions, consisted of 30 headings so arranged that they could be added together to form a smaller number of more inclusive categories. In order to avoid subjectivity as far as possible in the classifications of the different *UM*'s, the following procedure was followed. Each *UM* was written on a separate card given a number and an indication of the kind of choice (positive or negative workmate choice or leader choice) to which it referred. For the *G* and *F* Classes (to which we limited this analysis) there were about 2700 cards. An assistant was instructed to sort these cards according to the list of categories, and after that to indicate on a special list the resulting classification of each card, giving its number. Then the cards were reshuffled and given to a second assistant — the "check coder" — who sorted them anew and listed the second sorting. After that, the two lists were compared and differences of classification registered. In a conference between the two classifiers each difference was discussed. Some of these cases were judged as errors ("*differences by oversight*"), that is, one of the classifiers immediately recognized that the card ought to have been classified otherwise. In this case the registration of difference was placed within brackets and the "wrong" classification corrected. Other cases, however, appeared more doubtful, and were consequently judged as "*differences by ambiguity*". These cards were referred to me for final decision. Some of these were difficult because they really contained two *UM*'s (which had not been recognized by me when first reading the motivations). They were therefore split up on to two cards, after which the classification was easy.

There are several advantages of the procedure outlined above compared with the somewhat simpler procedure of only going through the motivations from the questionnaires and placing them directly into categories. By writing the different *UM*'s on cards, the whole procedure of classifying was simplified because the possibilities of surveying and comparing were increased while there was less risk of the influence of pre-established ideas about certain pupils.[4] By letting two assistants do the sorting independently, the risk of subjectivity was lessened and errors by oversight could be detected. Finally, we could obtain a quantitative estimation of "inter-classifier agreement". For the total series of 2706 cards, the "*primary inter-classifier agreement*" was 93 %, and the "*final inter-classifier agreement*" (after differences "by oversight" had been eliminated) was 96 %, figures which were felt to be very satisfactory for the present purpose.

## 2. Data Survey

### A. *Motivations with respect to positive workmate choices*

Table 7.11 shows the proportional distribution of motivations pertaining to the positive workmate choices. The general classification, so far not discussed, is presented in the column farthest to the left. In the present section we will give several examples illustrating the different categories.

The motivations may of course be classified in many different ways. A basic categorization which divides the whole material into two parts is used here: we distinguish between what might be called "*dyadic motivations*" ("we-motivations"; motivations which refer to the relation between the chooser and the chosen, most often the chooser's experience of being together with the chosen) and "*monadic motivations*" ("he (she)"-motivations; motivations which refer to the chosen only). A dyadic motivation says, for example: "we are good friends", "he and I play handball in the same team", or "she has the same hobbies as I have", whilst a monadic motivation may be thus formulated: "he is good at mathematics", "she has such beautiful eyes", or "he never tells on a classmate". It is interesting to note (a) that the number of monadic motivations is much larger than the number of dyadic motivations (72 % as against 28 % for the total population analyzed here); (b) that the number of dyadic motivations is larger for the younger children than for the older ones (in grades 3—5 we find 35 % as against 21 % in grades 6—8) and (c) that the number of dyadic motivations is larger among the boys than among the girls (38 % as against 22 %).[5]

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[4] On the other hand, a single *UM* could sometimes not be classified without referring to the *TM* to be sure that the correct meaning was obtained; in this respect our *UM* corresponds to the "recording unit", and the *TM* to the "context unit" discussed in "content analysis" (cf., e. g., BERELSON 1952, CARTWRIGHT 1953).

### a. *Monadic motivations*

Among the motivations referring to the chosen only, we find many different types: those dealing with physical characteristics, emotional characteristics, proficiency and ability characteristics, characteristic work-related behavior, or characteristic people-related behavior, to mention only the main categories as shown in the table.

*Physical characteristics* are rarely mentioned (only 0.8 % in total).[6] Strength is referred to only by boys ("he is so strong"), whilst appearance is mentioned exclusively by girls ("she has beautiful black hair").

Somewhat more often we find statements about *emotional characteristics* (3.8 %). Cheerfulness is often mentioned: "is always so cheerful", "lively", "jolly", "gay". Lack of "emotional stability", the tendency to be easily aroused to anger or fear, is repeatedly referred to: "isn't irritable like most of them", "never goes to pieces", "never sulks", "if others make fun of her or say something she doesn't like, she never gets angry, at least, she doesn't show it", "always makes the best of things"; "always calm"; "always plucky".

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[5] As it is not correct to apply a chi-square test of significance directly to these proportions in so far as they deal with the number of motivations instead of the number of individuals, another procedure was tried out for obtaining statements of significance. For each individual an index *M—D* (the number of monadic motivations given minus the number of dyadic motivations given) was established. The differences were then examined by making a median cut through the distribution in order to obtain a category of "high scorers" and a category of "low scorers". In order to disregard sex differences when dealing with age differences and vice versa, we used relative instead of absolute scores, that is, when considering age differences, the primary classification of "high scorers" and "low scorers" was made for each sex separately, and when considering sex differences, it was made for each grade level separately. With this method, the differences between grades 3—5 and grades 6—8 were found to be clearly significant ($P < .01$) and the sex differences to be highly significant ($P < .001$).

[6] The total number of *UM*'s from which the percentages in this section are calculated, are given at the bottom of Table 7.11.

Table 7.11. The Percentage Distribution of Spontaneous Choice Motivations with Respect to Positive Workmate Choices in *M* Classes and *F* Classes

| Categories of motivation | Boys | | | Girls | | | Total |
|---|---|---|---|---|---|---|---|
| | 3–5 | 6–8 | 3–8 | 3–5 | 6–8 | 3–8 | |
| I. *Monadic motivations:* | *55.0* | *70.3* | *62.5* | *71.9* | *86.1* | *78.3* | *72.0* |
| 1. *Physical characteristics* | *1.3* | *0.0* | *0.7* | *1.2* | *0.6* | *0.9* | *0.8* |
| a. strength | 1.3 | 0.0 | 0.7 | 0.0 | 0.0 | 0.0 | 0.3 |
| b. appearance | 0.0 | 0.0 | 0.0 | 1.2 | 0.6 | 0.9 | 0.5 |
| 2. *Emotional characteristics* | *1.9* | *3.1* | *2.5* | *3.3* | *6.5* | *4.7* | *3.8* |
| 3. *Proficiency and ability characteristics* | *16.2* | *14.3* | *15.2* | *14.0* | *11.1* | *12.7* | *13.7* |
| a. judgments on general school proficiency | 7.5 | 11.5 | 9.5 | 12.5 | 8.7 | 10.8 | 10.3 |
| b. judgments on special school proficiency | 7.5 | 1.1 | 4.4 | 1.5 | 0.4 | 1.0 | 2.3 |
| c. judgments on intellectual ability | 1.1 | 1.7 | 1.4 | 0.0 | 2.0 | 0.9 | 1.1 |
| 4. *Characteristic work-related behavior* | *10.0* | *17.4* | *13.6* | *14.0* | *16.7* | *15.2* | *14.6* |
| a. interest, habits | 8.4 | 12.6 | 10.4 | 9.2 | 11.9 | 10.4 | 10.4 |
| b. discipline | 1.6 | 4.8 | 3.2 | 4.8 | 4.8 | 4.8 | 4.1 |
| 5. *Characteristic people-related behavior* | *25.1* | *33.1* | *29.0* | *38.2* | *47.6* | *42.4* | *37.1* |
| a. general judgments | 16.2 | 19.0 | 17.6 | 22.4 | 24.4 | 23.3 | 21.0 |
| b. giving | 5.9 | 6.7 | 6.3 | 11.5 | 14.1 | 12.7 | 10.2 |
| c. leading | 1.1 | 0.8 | 1.0 | 0.2 | 1.4 | 0.7 | 0.8 |
| d. norm-following | 1.9 | 6.4 | 4.1 | 4.1 | 7.7 | 5.7 | 5.1 |
| 6. *Choice-fact emphasis* | *0.5* | *2.5* | *1.5* | *1.3* | *3.6* | *2.4* | *2.0* |
| II. *Dyadic motivations:* | *45.0* | *29.7* | *37.5* | *28.1* | *13.9* | *21.7* | *28.0* |
| 7. External proximity | 6.7 | 5.3 | 6.0 | 5.6 | 0.6 | 3.4 | 4.4 |
| 8. Liking relation | 7.5 | 7.0 | 7.3 | 7.1 | 7.1 | 7.1 | 7.2 |
| 9. Giving relation | 2.7 | 1.1 | 1.9 | 1.2 | 1.2 | 1.2 | 1.5 |
| 10. Leading relation | 0.0 | 0.0 | 0.0 | 0.5 | 0.0 | 0.3 | 0.2 |
| 11. Similarity relation | 0.5 | 2.5 | 1.5 | 0.5 | 1.8 | 1.1 | 1.3 |
| 12. Experience of being together in non-work situations | 22.9 | 9.5 | 16.3 | 11.7 | 1.2 | 7.0 | 10.7 |
| 13. Experience of being together in work situations | 4.6 | 4.2 | 4.4 | 1.6 | 2.0 | 1.8 | 2.8 |
| Total number of motivations (*UM*'s) | *371* | *357* | *728* | *608* | *496* | *1104* | *1832* |

Fairly common in all classes are judgments about the chosen's *proficiency and ability characteristics* (13.7 %). Most of these are general judgments on school proficiency (10.3 %): "is very clever at school", "can nearly always answer the questions", "knows almost everything", etc. Less common are judgments of more specific school proficiency (2.3 %; "good at spelling", "good at arithmetic", "good at athletics", "a fast runner", "plays football well", "can sing so beautifully", "is so good at handwork", "a good drawer", etc.), and judgments on intellectual ability (1.1 %; "intelligent", "understands easily", "a quick thinker", etc.). For the sake of simplicity we include within this category a few references to "memory": "she has a good memory, and you need that in a work group".

Different kinds of *characteristic work-related behavior* are also mentioned fairly often (14.6 %). A preliminary sub-division into two categories was made: the first contains statements of working habits and working interest, the second contains statements of disciplinary conditions of importance for work at school. As examples of the first sub-category we may mention: "diligent", "persistent", "energetic in work", "does not give in when something is difficult", "wants to work and do something", "has drive", "knows what he wants and how to get it", "has great interest in work", "always pays attention in class"; "careful in work", "doesn't do anything by halves", "thinks things over carefully", "works quickly", "can do a thing by himself". As examples of the other sub-category we may mention: "is never noisy in class", "never fidgets and titters in class", "doesn't disturb the others", "doesn't make a row in the class".

Among the main categories in the table, the one referring to the chosen's *characteristic people-related behavior* is the largest (37.1 %). The girls refer to this type of motivation more often than the boys (42.4 % *v.* 29.0 %; using an individual-directed analysis, we obtain $P < .01$). Within this main category, many *UM*'s consist of general statements very indefinite in meaning (21 % of the total number of *UM*'s), such as "nice", "nice chap", "a decent fellow", "a first-rate fellow", etc. (Such words cannot be very adequately translated from one language to another, and, in fact, the same expressions may sometimes change meaning from one place to another and from one time to another within the same linguistic area.)

The Swedish word "*snäll*" (here tentatively translated by the English "nice") was perhaps the one least possible to delimit clearly. The word was more usual among the girls than among the boys, and more frequent among the younger children than among the older ones. What do the pupils in our investigation mean when they say that a classmate is "nice" ("snäll")? In order to obtain a more concrete idea of this, we instructed the teachers in two classes to give as composition "What I mean by a nice ('snäll') boy" (in class 3m, the only boys' class where the word was frequent) and "What I mean by a nice ('snäll') girl" (in class 6f, the oldest girls' class, where the word was sufficiently common). By selecting these two classes we hoped to cover the widest differences in meaning. Most conspicuous in the compositions (collected one month after the main investigation was made) was the great diversity of phenomena which could be referred to by the inclusive "snäll". Three short examples will be given:

(3m) "Once upon a time there was a nice boy who was called Sven-Åke. A nice boy should be polite and orderly. And so is the boy I write about. If you ask if you may borrow a marble from him, you are allowed to do it. And if you ask if you may come up and play with him, you are allowed to do that".

(3m) "The expression 'a nice boy' is often misused. Now I will explain it. To be a nice boy is the same as to be friendly, polite, and not quarrel. It is misused, for example, only in order to get someone to do something that others dare not do themselves. Then they say 'otherwise you are not a nice boy' . . ."

(6f) "In order that a girl should be nice, I think she ought to respect her parents and help them, be obedient to her teacher, help her brothers and sisters and her classmates. For example, when I had just moved in to this town and was to begin school, I did not know any girls here. Then Karin och Inga-Britt in my class were very nice to me. They showed me how to do things. And they gave me sweets when they had any. They helped me with arithmetic. They lent me a pencil, for I had not got any from the teacher then. — And when you ask your parents whether you may go to the cinema, and they say no, then you should not ask any more. And if you have a friend, you should not slander her behind her back and stick up for her to her face. But you should stick up for her everywhere. And you should not poke fun at people. — This is what I mean by a nice girl." (The two classmates mentioned, especially observed by the new girl, both had a high sociopreferential status in the class — as *AB* and *AG* — and were mutual friends.)

Summing up from the different contributions, both girls and boys mentioned the following characteristics of a "nice" classmate: "helpful" (mentioned by 7 boys and 16 girls), "shares with others if he (she) has something to offer" (mentioned by 11 boys and 12 girls), "allows others to decide", "humorous", "grateful"; "never fights", "never quarrels", "never makes a fuss", "doesn't scold others"; "honest", "true to his (her) word", "doesn't lie", "doesn't cheat", "doesn't swear"; "calm", "not sullen"; "orderly", "not noisy"; "polite", "obedient", "not cheeky". Among the expressions employed by boys only we find, for instance, "clever", "fair", "doesn't give in". Among the expressions used by girls only, on the other hand, we find, for example, "cheerful", "not stuck-up", "doesn't poke fun at others". It is obvious that an individual who is helpful and shares with others if he has something to offer is the one who is most likely to be described as "nice" both by boys and girls. Although the Swedish "snäll" apparently has such a multivarious use that it could almost equally well have been placed within several different categories, it is also clear that it is most defendable to place the word as has been done — below the heading "characteristic people-related behavior".

Whilst the sub-category of general statements forms the majority of motivations referring to characteristic people-related behavior, other types are also found. Among the more specific motivations, we distinguish between those dealing with "giving behavior" (10.2 %), "leading behavior" (0.8 %), and "norm-following behavior" (5.1 %). "*Giving behavior*" may be of many different kinds. "Material generosity" is very often stressed: "gladly shares with others if he has something to offer", "willingly lends things to those who need something", etc. Generosity with respect to work and advice is also often reported: "is very helpful", "helps at once when somebody needs help", etc. In addition, the "giving" may be purely personal — the offer of emotional contact, kindness and stimulation (most often mentioned by the older children): "is nice to talk to", "you could chat with her about everything", "if somebody is alone in the playground, she will come and keep her company", "thinks of others, too", "understanding", "friendly", "pleasant to be around", "has so many good ideas", "often invents funny plays", "is a lot of fun so that time passes quickly", "amusing", "tells anecdotes so that you need not have a dull time", "knows how to cheer you up", "spreads happiness around".

"*Leading behavior*" is mentioned only infrequently: "encourages others to work", "a good organizer", etc.

"*Norm-following behavior*" is alluded to somewhat more often. The two "norms" most often referred to by the present boys and girls could be paraphrased thus: "You should not tell on a classmate" and "You should not quarrel". Examples: "is reliable and trustworthy", "never tells tales", "is not tale-bearing", "is no tell-tale", "doesn't blab about a thing to people it does not concern", "you can confide in him", "is no backbiter", "is honest", "doesn't lie"; "is never quarrelsome", "doesn't quarrel", "never fights"; "doesn't swear", "doesn't use bad words".

A few motivations simply state that the chosen is a "good workmate". Of course, these could have been included in the category of "work-related behavior", but because of their meagre informative value, they have been placed in a separate category: "*choice-fact emphasis*".

### b. *Dyadic motivations*

Among the motivations referring to the specific chooser-chosen relation we find many different kinds, just as we did in the case of monadic motivations: they stress external factors which have brought two individuals together, liking relations, giving relations, leading relations, similarity relations, or general experience of being together in work or non-work situations.

*External factors which have brought two individuals together* (4.4 %) in total) may be of various types: geographical proximity ("we live in the same block of flats", "we lived together earlier", "we go home from school the same way", "we have gardens quite near each other"), proximity in school ("we sit near each other in the classroom", "we have been in the same class from the beginning"), acquaintance between the two families ("my mother and her mother are friends"), or kinship ("she is my cousin").

The existence of a *liking relation* is fairly often stressed (7.2 % in total): "we are friends", "he is my best friend"; "we have been friends for four years"; "we like each other", "I like her so much"; "we get on well together".

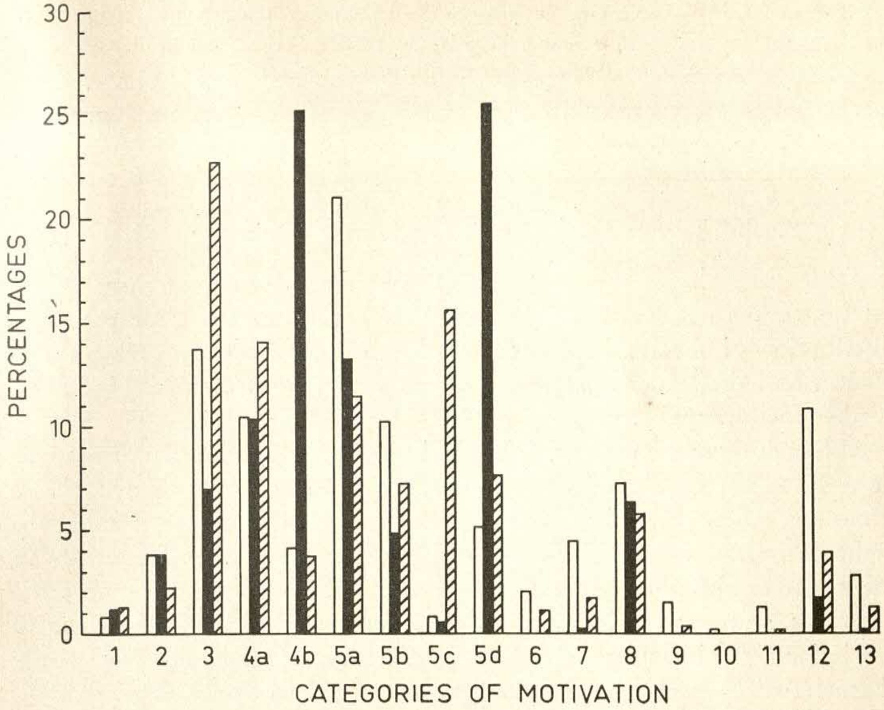
*Giving relations* are sometimes reported (1.5 %): "in summer-time I am allowed to go with him in his canoe", "I get marbles from him", "he gives me sweets", "he let me play on his accordion", "he has let me borrow his skates" (all these examples are taken from class 3m); "when the teacher asks who is the best writer of compositions, he usually says that I am", "when we're out running and I get a pain in my side so that I can't run any more, he stays with me", "if I can help him in some way, I know that he will do something for me in return", "if I happen to get into trouble, he always helps me". References to *leading relations* ("organizes things for me") are less frequent (0.2 %).

*Similarity* between the chooser and the chosen is only mentioned occasionally (1.3 %): it may be similarity of interests ("he and I have the same interests"), or similarity of working habits ("he works in the same way as I do").

*General experience of being together in non-work situations* is often referred to (10.7 % of all motivations with respect to positive workmate choices; the most frequently used category among dyadic motivations). Most usual within this category are general statements about playing together: "we always play together", "he is my playmate", "we play together in the summer-time". These "playmate references" tend to be

Table 7.12. The Percentage Distribution of Spontaneous Choice Motivations with Respect to Positive and Negative Workmate Choices and Leader Choices in *M* Classes and *F* Classes

| Categories of motivation | Positive workmate choices | Negative workmate choices | Leader choices |
|---|---|---|---|
| I. *Monadic motivations:* | *72.0* | *91.6* | *86.7* |
| 1. *Physical characteristics* | *0.8* | *1.2* | *1.3* |
| a. strength | 0.3 | 0.5 | 1.1 |
| b. appearance | 0.5 | 0.7 | 0.2 |
| 2. *Emotional characteristics* | *3.8* | *3.8* | *2.2* |
| 3. *Proficiency and ability characteristics* | *13.7* | *7.0* | *22.7* |
| a. judgments on general school proficiency | 10.3 | 4.3 | 15.7 |
| b. judgments on special school proficiency | 2.3 | 1.2 | 3.3 |
| c. judgments on intellectual ability | 1.1 | 1.4 | 3.7 |
| 4. *Characteristic work-related behavior* | *14.6* | *35.6* | *17.7* |
| a. interest, habits | 10.4 | 10.3 | 14.0 |
| b. discipline | 4.1 | 25.2 | 3.7 |
| 5. *Characteristic people-related behavior* | *37.1* | *44.0* | *41.7* |
| a. general judgments | 21.0 | 13.2 | 11.4 |
| b. giving | 10.2 | 4.8 | 7.2 |
| c. leading | 0.8 | 0.5 | 15.5 |
| d. norm-following | 5.1 | 25.5 | 7.6 |
| 6. *Choice-fact emphasis* | *2.0* | *0.0* | *1.1* |
| II. *Dyadic motivations:* | *28.0* | *8.4* | *13.3* |
| 7. External proximity | 4.4 | 0.2 | 1.7 |
| 8. Liking relation | 7.2 | 6.3 | 5.7 |
| 9. Giving relation | 1.5 | 0.0 | 0.4 |
| 10. Leading relation | 0.2 | 0.0 | 0.0 |
| 11. Similarity relation | 1.3 | 0.0 | 0.2 |
| 12. Experience of being together in non-work situations | 10.7 | 1.7 | 3.9 |
| 13. Experience of being together in work situations | 2.8 | 0.2 | 1.3 |
| Total number of motivations (*UM*'s) | *1832* | *416* | *458* |



*Key:*

▯ motivations with respect to positive workmate choices

▮ motivations with respect to negative workmate choices

▨ motivations with respect to leader choices

(for the category labels, cf. Table 7.11)

Fig. 7.2. Reports of choice motivations: The relative frequency of different categories of motivation.

more common among boys than among girls and more common among younger children than among older ones (boys 3—5: 15.9 %, boys 6—8: 2.0 %; girls 3—5: 7.6 %; girls 6—8: 0.0 %). In addition, there are non-specific statements about being together ("we are always together", "he and I are usually together in our spare time") and statements of specific leisure-time occupations ("we play ball in the afternoon", "we usually play football in a club of our own", "we have trained to run together", "we both go to riding school together", "we play table tennis together", "we belong to the same scout troop").

*General experience of being together in work situations* is less often mentioned (2.8 %): "we do our lessons together", "we do our homework together", etc.

### B. *Motivations with respect to negative workmate choices*

Table 7.12 shows the proportional distribution of motivations pertaining to the negative workmate choices. For comparative purposes the distribution of motivations with respect to both the positive workmate choices and the leader choices are included in the same table. Figure 7.2 further facilitates the comparison.

Although there are many similarities between the distribution of motivations into different categories in the positive and the negative choice situations, there are also certain conspicuous differences. Among the monadic motivations, two categories have been used more frequently in the negative situation (disciplinary conditions which are of importance for work, and norm-following behavior). On the other hand, less frequent are judgments about general school proficiency, general judgments about characteristic people-related behavior, and references to giving behavior.

More than 50 % of the motivations pertaining to negative choices refer to bad discipline during working hours or to violation of the norms of the group. The bad discipline during working hours (25.2 % in total) is mentioned more often by the girls than by the boys (28.1 % *v.* 17.7 %): "often fidgets and titters in class", "is too noisy", "shouts and blusters", "chatters too much", "can't sit still". Violations of the norms of the group (25.5 % in total), on the other hand, are alluded to more often by the boys than by the girls (34.5 % *v.* 22.1 %): "often tells tales", "is untrustworthy", "you cannot confide in him", "spreads stories about the class", "lies rather often"; "is rather quarrelsome", "is always fighting", "pulls the other girls' hair and grabs their legs when they go upstairs", "pinches her classmates"; "stuck up", "high and mighty", "pretends to be fashionable", "if she has done anything well, she may go around being proud of it for a whole week".

General judgments ("bad", "nasty", "disagreeable in every way", etc.) are made in 13.2 % of the motivations, bad working habits or lack of interest in work — is mentioned in 10.3 % ("is rather careless", "won't stick at her work", "gives in easily", "leaves off work before it is finished", "lazy", "is not interested in school work", "does not pay attention in class"), lack of proficiency at school and low intelligence in 7.0 % ("can seldom answer the questions", "not at all clever at school", "bad results in arithmetic", "not quite all there"), and absence of "giving behavior" in 4.8 % ("rather stingy", "never willing to lend anything to others", "never willing to offer anything to others", "not helpful", "difficult to talk to", "a bore"). — The other categories of monadic motivations are only referred to occasionally: "not strong", "bad breath", "dirty"; "easily goes to pieces", "sulks for no reason", "doesn't dare to do anything".

*Dyadic motivations* are far less common in connection with negative choices than in connection with positive choices (8.4 % *v.* 28.0 %). Most common are general references to relations of dislike ("I don't like her at all", "we are enemies", "I have never been friends with him", "I don't think much of him") and reports of relations of dislike as a consequence of specifically mentioned, often "norm-breaking", behavior of the rejected ("he kicks me", "he throws snowballs at me", "he calls me names", "he calls me an eel", "he teases me for stammering", "I get the blame for what she does", "she spoils everything I do", "she always demands that I shall mark her right when her exercises are wrong", "She's envious of me. When I'm asked a question during a lesson and she isn't, she's cross, and when I'm allowed to run an errand for our teacher, she always says, 'Of course, *she* would be allowed to go instead of me'."). These two subcategories, which for the sake of simplicity and comparability are combined in the table under the general heading of "liking (disliking) relation", together make up 6.3 %. Other categories occur only seldom: "we have not done home work together", "I have never played with her".

### C. *Motivations with respect to leader choices*

Table 7.12 and Figure 7.2 also include a survey of motivations with respect to leader choices. In comparison with the motivations pertaining to positive workmate choices, we find a decrease in general statements of the "nice" type and of dyadic motivations, especially those reporting being together in non-work situations. In comparison with the motivations pertaining to negative workmate choices, on the other hand, we find a decrease of motivations referring to discipline during working hours and norm-following behavior. In both comparisons we find an increase in judgments about general school proficiency and — of course — of motivations dealing with "leading behavior".

A difference which is not seen from the proportional distribution is that the leader motivations are often expressed in the superlative form. If the workmates are characterized as "clever", "hard-working", "neat", or "intelligent", the individual chosen as leader is often described as "most clever", "most hard-working", "neatest", or "most intelligent" — that is, within the group or within the class. — Among the motivations dealing with "leading behavior", two sub-categories may be distinguished: one (4.6 %) giving general judgments ("he is the best leader", "he is most suited to be that", "I think he would manage this job very well"), and one (10.9 %) giving more specific items of information ("can give orders", "can keep the others in order", "can organize things", "can make herself heard", "can make us work").

### D. *Choice motivations and richness of detail:*
### *The number of UM's per choice*

Table 7.13 is designed to give a picture of the average richness of detail within the total choice motivations, expressed as the number of *UM*'s per choice. Three facts are conspicuous: (a) there is greater richness of detail in motivations pertaining to positive than in those pertaining to negative choices; (b) in nearly every case there is greater richness of detail in motivations given by girls than in motivations given by boys; (c) there are no clear age differences.

## 3. Discussion

*Spontaneous motivation and the "subject-directed" approach.* Instead of giving spontaneous motivations, the subjects could have been instructed to indicate in a questionnaire, listing all the different categories mentioned here (and, perhaps, additional ones), which factors were true in their case and which factors had the greatest influence in determining their choice. In fact, such a questionnaire was developed on the basis of the 1950 investigations on spontaneous motivations and was used in ten school classes. However, this approach did not give any interesting findings beyond those already obtained with the aid of the spontaneous motivations (the results have been presented in BJERSTEDT 1952 a and will not be repeated here). Of course, the more systematic and well-structured "questionnaire approach" has a certain advantage over the relatively impromptu and unstructured "Why? approach", the result of which has been analyzed above: the individual is forced to reflect on a larger number of possibilities some of which he would not perhaps otherwise be aware

Table 7.13. Choice Motivation and Richness of Detail: The Number or *UM*'s per Choice

| Class | Positive workmate choices | | | Negative workmate choices | | | Leader choices | | |
|---|---|---|---|---|---|---|---|---|---|
| | *UM* | *p* | $\frac{UM}{p}$ | *UM* | *n* | $\frac{UM}{n}$ | *UM* | *L* | $\frac{UM}{L}$ |
| 3m | 104 | 75 | 1.39 | 34 | 38 | 0.89 | 30 | 24 | 1.25 |
| 4m | 185 | 102 | 1.81 | 38 | 44 | 0.86 | 43 | 34 | 1.26 |
| 5m | 82 | 69 | 1.19 | 13 | 29 | 0.45 | 20 | 21 | 0.95 |
| 3m—5m | 371 | 246 | 1.51 | 85 | 111 | 0.77 | 93 | 79 | 1.18 |
| 6m | 131 | 75 | 1.75 | 16 | 18 | 0.89 | 39 | 25 | 1.56 |
| 7m | 135 | 78 | 1.73 | 11 | 13 | 0.85 | 37 | 26 | 1.42 |
| 8m | 91 | 57 | 1.60 | 1 | 1 | 1.00 | 21 | 19 | 1.11 |
| 6m—8m | 357 | 210 | 1.70 | 28 | 32 | 0.88 | 97 | 70 | 1.39 |
| 3m—8m | 728 | 456 | *1.60* | 113 | 143 | *0.79* | 190 | 149 | *1.28* |
| 3f | 153 | 85 | 1.80 | 37 | 33 | 1.12 | 48 | 29 | 1.66 |
| 4f | 272 | 105 | 2.59 | 75 | 58 | 1.29 | 65 | 35 | 1.86 |
| 5f | 183 | 69 | 2.65 | 44 | 41 | 1.07 | 34 | 23 | 1.48 |
| 3f—5f | 608 | 259 | 2.35 | 156 | 132 | 1.18 | 147 | 87 | 1.69 |
| 6f | 185 | 75 | 2.47 | 36 | 28 | 1.29 | 35 | 25 | 1.40 |
| 7f | 172 | 75 | 2.29 | 82 | 56 | 1.46 | 47 | 25 | 1.88 |
| 8f | 139 | 69 | 2.01 | 29 | 16 | 1.81 | 39 | 23 | 1.70 |
| 6f—8f | 496 | 219 | 2.26 | 147 | 100 | 1.47 | 121 | 73 | 1.66 |
| 3f—8f | 1104 | 478 | *2.31* | 303 | 232 | *1.31* | 268 | 160 | *1.68* |
| Total | 1832 | 934 | *1.96* | 416 | 375 | *1.11* | 458 | 309 | *1.48* |

of. On the other hand, we are interested in the immediately relevant social world of the subjects (in fact, those parts of which he *is* aware), and only the spontaneous motivation gives us an undisturbed picture of the "perceptual" selection process. Unstructured stimuli have repeatedly been shown to allow individual differences to be seen clearly, and there is no reason to expect this specific case to be an exception.[7]

Some of the categories could be criticized on the grounds that, in fact, they are intimately related, and that subjects explaining with different expressions, which have been placed in different categories here, may after all start from relationships which are very similar. This is of course quite true. Imagine a series of pair relations which could all be described as liking relations, perhaps started because of geographical proximity, developed as the subjects were together in non-work and work situations, and producing increasing similarity between the members, and increasing instances of "giving behavior". It is quite possible that different individuals would describe this relation differently: some would pick out the geographical proximity, others the being together, or the similarity, or the giving behavior, or the general liking. Still others would not give a dyadic motivation at all, but describe the partner as a "nice" person in general, a "stimulating" classmate, etc. But although the general positive attitude could be described as a function of several factors, it is not without interest to see *which* of these factors is picked out by a specific subject. In psychology, it is always of interest to describe phenomena also on the subject-level of "perception". When using a subject-directed approach the "*socio-perceptual purification*" of the subjects is no longer a difficulty in research, but the primary object of research.

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[7] A specific advantage of the spontaneous expression is, of course, that the phenomena are discussed in terms which are directly meaningful to those involved and that, thus, the conceptual scheme of the investigator is not allowed to dominate. In this way it is possible not only to obtain checks on data collected by other methods, but also perhaps to receive new stimulation and fresh ideas.

*Dyadic attitude v. monadic attitude and the degree of positive reciprocity.* In chap. 5 above, we discussed among other things different degrees of positive reciprocity and asked ourselves whether a higher degree of positive reciprocity might not be related to a higher degree of "chooser-relatedness" in the preferences. For example, we argued, a co-worker may be chosen primarily because he is considered to be a good worker (the case of "chosen-relatedness" only) or because "I, the chooser, have experienced interaction with him and found that *we* fit together" ("chooser-relatedness"). According to this argument, it would be natural to find higher reciprocity indices in the *AB* Classes than in the *MF* Classes, since the pupils in the latter had less experience of being together in work situations. However, there was also a tendency in the girls to show a lower degree of reciprocity than the boys. There naturally followed the question, could the preferences of the boys be attributed to a more chooser-related basis than those of the girls? In fact, as we have shown in this chapter, we find more chooser-related (dyadic) choice motivations among the boys than among the girls. In other words to put it more concretely, the boys tend to use more "we-colored" and "situation-determined" motivations than the girls. When the boys have said: "*We usually do* this or that together", the girls have more often stated: "*She is* such or such". The general discussion of positive reciprocity above thus seems to have received a more solid empirical foundation.

*Positive v. negative choice situations.* It seems that the children found it easier to give their reasons for the positive choices than for the negative ones. It is probably a consequence of the general resistance to rejection reports. Dyadic motivations were found to be more infrequent in the negative choice situation than in the positive. Is a "trait theory" more applicable to the status of rejected children than to the status of accepted children? Or do children tend to have their own reasons for their attractions and "conventional", "group-induced" reasons for their rejections? Or, finally, do the children wish to transform their personal reasons for rejections into something which will give the impression of objectivity, thereby lessening a feeling of "bad conscience"? All these reasons are possible in certain cases; further research may clarify this point.

*Dyadic attitude and social flexibility.* Is a dyadic or a monadic attitude more desirable from the educator's point of view? This question cannot be answered directly; the reply depends on the aim of the school and how these attitudes manifest themselves. At first glance, it might seem as if a monadic attitude represents a more mature stage, combined as it often is with evaluation of others with reference to more objective attributes. On the other hand, the relativism often inherent in a dyadic attitude may sometimes be an effective hindrance against stereotyping, favoritism and rejection in a more general sense. The monadic attitude may often represent a quasi-objectivity, dependent on a lower degree of personal experience, and thus show an undesirable degree of social inflexibility. To a certain extent, it does not seem wrong if the teacher tries to educate his pupils — both boys and girls — to evaluate others to a greater degree from a dyadic point of view, stressing that no one should be regarded as representing an absolute value or an absolute lack of value in general, but rather as being of value in specific situations and for specific individuals.

## THIRD PART:

# SOCIOMETRIC CHOICE STATUS COMPARED WITH EXTRA-SOCIOPREFERENTIAL DATA ("THE BETA EXPERIMENTS")

Chap. 8. Collection of data in the Beta Experiments

Chap. 9. Extra-sociopreferential correlates

CHAPTER 8

# COLLECTION OF DATA IN THE BETA EXPERIMENTS

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## I. SUBJECTS IN THE BETA EXPERIMENTS

As we have mentioned already in the introduction, our principal aim in the Beta Experiments was to pick out subjects with extreme sociopreferential status scores and compare them with respect to different kinds of behavior, examining whether the interpretations often made implicitly about extreme-status individuals in applied preferential sociometry were tenable. In the first place, we intended to contrast the most often positively selected (high $\bar{p}$) and the most often negatively selected (high $\bar{n}$). Due to the negative correlation between $\bar{p}$ and $\bar{n}$, the latter category was, as a rule, found to be composed of individuals with extremely low $\bar{p}$-values. In the cases where negative choices had not been given, therefore, those pupils were instead selected who had the lowest $\bar{p}$-score. In addition, the $\bar{p}$-score was used as a determining factor in cases where several children had the same $\bar{n}$-score. (What this meant exactly for the distribution of the selected extreme categories with respect to $\bar{p}$- and $\bar{n}$-scores, as well as with respect to other basic sociopreferential variables, is demonstrated in detail below, chap. 9: II.) As we wished to examine such extreme individuals of different ages and sexes, both boys and girls were selected from each of the six Swedish grade levels 3—8 (approximately corresponding to the age levels 9—14 years).

The main sample of subjects in the Beta Experiments (called "*Beta Basic*"), selected on the basis of these principles, was composed of 136 pupils, taken from the *MF* Classes ("*MF* Part of Beta Basic") and the *AB* Classes ("*AB* Part of Beta Basic"). From each class, eight pupils were chosen: four boys and four girls. Among the four boys were the two most often positively selected and the two most often negatively selected in the class. Similarly, among the four girls were the two most often positively selected and the two most often negatively selected in the class. The total sample of 136 pupils (Beta Basic) may be subdivided in different ways:

(a) one "High-Status" sample including the individuals with high $\bar{p}$ and one "Low-Status" sample primarily including the individuals with high $\bar{n}$ (cf. discussion above)
(68 + 68 subjects, "the *H*[*igh*] *Sample* and the *L*[*ow*] *Sample*");
(b) one boy sample and one girl sample
(68 + 68 subjects, "the *M*[*ale*] *Sample* and the *F*[*emale*] *Sample*");
(c) six different age samples
(24 pupils from each of the grade levels 3—7 and 16 pupils from grade level 8).[1]

We therefore had opportunities for different kinds of comparisons. However, the subdivision most often used subsequently will consist of a cross-classification of (a) and (b) into four sub-samples:

(d) one "*H*igh boy" sample ("the *Hm Sample*");
one "*L*ow boy" sample ("the *Lm Sample*");
one "*H*igh girl" sample ("the *Hf Sample*"); and
one "*L*ow girl" sample ("the *Lf Sample*");
that is, 34 + 34 + 34 + 34 subjects.

The Beta Basic Sample was deliberately chosen from such simple considerations as non-specialists applying the test in the classroom often use, as we wished to see if this kind of selection would justify the interpretations often made from it. The Beta Basic selection could of course be criticized from more strict points of view in the following respects: (a) the "High" category may by too comprehensive in including people who combine high $\bar{p}$ with fairly high $\bar{n}$ or people who, although having the highest $\bar{p}$-scores, do not have sufficiently high $\bar{p}$-scores to stand out clearly from most of the pupils; (b) the "Low" category may be too comprehensive in including people who combine high $\bar{n}$ with fairly high $\bar{p}$ or people with low $\bar{p}$, but no rejections received. Hence, it should also be of value to compare this broad selection with a more "restricted" selection. We have therefore picked out part of "Beta Basic", calling this part "*Beta Restricted*", according to the following principles. In the "High" category of the restricted sample ("the *Hr Sample*") were included only pupils who had $\bar{p}$-scores above $M + 1\ S.D.$ together with *no* rejection received. In the "Low" category of the restricted sample ("the *Lr Sample*") were included only pupils who were both among the two pupils lowest in $\bar{p}$ and the two highest in $\bar{n}$. After this general elimination, an additional reduction was made to ensure that the number of pupils would still be evenly distributed on the different age levels in the sub-categories to be compared with each other (for example, if in grade 3 there were four "High" but only three "Low" girls left, the least extreme of the high girls was excluded). After these different kinds of elimination, the resulting sample (Beta Restricted) consisted of 64 pupils: 32 "High" and 32 "Low".

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[1] The lower number on grade level 8 is due to the fact that the pupils in class 8b were not as a rule available at the testing periods, the individuals of this class having part time practical work outside school. However, the eight pupils who ordinarily would have been selected from this class, are included in some of the situations. In these cases — for example, in the classroom observations — the total Beta Basic Sample includes 144 pupils. — Capital letters are used in expressions such as the "High-Status" pupils and the "Low-Status" pupils when referring to the specific samples used in Beta Basic (and Beta Restricted, cf. below), whereas small letters are used when discussing status levels in the Alfa Experiments, or when using the terms more loosely, e. g., in discussions of other investigations with similar, but not identical principles of subject selection.

The size of the Beta Basic and Beta Restricted Samples seemed fairly suitable, in so far as the individuals were not too many to hinder intensive testing with a detailed test battery, while yet not being too few to prevent certain conclusions about the more general tendencies of the results obtained. At the same time, it also seems to be of great interest to see how a certain test variable is correlated with the different sociometric choice status scores within a total sociopreferential "choice area", for instance, in a total class in which all kinds of sociopreferential positions exist, not only the most extreme ones. Some of the tests were therefore not only given to Beta Basic, but also to all the pupils of one or two ordinary classes (the "*Beta Extra Classes*").

All the pupils of the Beta Experiments are given code-names. In the Beta Extra Classes the same principles are used as in the Alfa Experiments (cf. chap. 5). In Beta Basic, the children are given two series of code-names: one short form to be used in certain diagrammatic representations and one long form to be employed when we wish to avoid too many numbers in the text. A survey of the long form code-names and the principles for their construction is given in Tables 8.1 and 8.2. The short form

Table 8.1. Survey of Code-Names in Beta Basic

| Grade level | Status and sex | *MF* Classes | | *A* Classes | | *B* Classes | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 1 | 2 | 1 | 2 |
| 3 | *Hm* | Ham | Hamn | Hame | Hamen | Hamo | Hamon |
| | *Hf* | Haf | Hafi | Hafa | Hafia | Hafu | Hafiu |
| | *Lm* | Lam | Lamn | Lame | Lamen | Lamo | Lamon |
| | *Lf* | Laf | Lafi | Lafa | Lafia | Lafu | Lafiu |
| 4 | *Hm* | Hem | Hemn | Heme | Hemen | Hemo | Hemon |
| | *Hf* | Hef | Hefi | Hefa | Hefia | Hefu | Hefiu |
| | *Lm* | Lem | Lemn | Leme | Lemen | Lemo | Lemon |
| | *Lf* | Lef | Lefi | Lefa | Lefia | Lefu | Lefiu |
| 5 | *Hm* | Him | Himn | Hime | Himen | Himo | Himon |
| | *Hf* | Hif | Hifi | Hifa | Hifia | Hifu | Hifiu |
| | *Lm* | Lim | Limn | Lime | Limen | Limo | Limon |
| | *Lf* | Lif | Lifi | Lifa | Lifia | Lifu | Lifiu |
| 6 | *Hm* | Hom | Homn | Home | Homen | Homo | Homon |
| | *Hf* | Hof | Hofi | Hofa | Hofia | Hofu | Hofiu |
| | *Lm* | Lom | Lomn | Lome | Lomen | Lomo | Lomon |
| | *Lf* | Lof | Lofi | Lofa | Lofia | Lofu | Lofiu |
| 7 | *Hm* | Hum | Humn | Hume | Humen | Humo | Humon |
| | *Hf* | Huf | Hufi | Hufa | Hufia | Hufu | Hufiu |
| | *Lm* | Lum | Lumn | Lume | Lumen | Lumo | Lumon |
| | *Lf* | Luf | Lufi | Lufa | Lufia | Lufu | Lufiu |
| 8 | *Hm* | Hym | Hymn | Hyme | Hymen | Hymo | Hymon |
| | *Hf* | Hyf | Hyfi | Hyfa | Hyfia | Hyfu | Hyfiu |
| | *Lm* | Lym | Lymn | Lyme | Lymen | Lymo | Lymon |
| | *Lf* | Lyf | Lyfi | Lyfa | Lyfia | Lyfu | Lyfiu |

code-names consist of two-digit numbers. The first digit shows the grade level: 3—8. The second digit shows the class: 1 and 2 belong to the *MF* Classes, 3 and 4 to the *A* Classes, 5 and 6 to the *B* Classes. Pupils with an odd last-digit were the first selected ("most extreme"), pupils with an even last-digit were selected second ("next most extreme"). To this two-digit number the label "*Hm*", "*Lm*", "*Hf*", or "*Lf*" is attached to denote the specific sub-sample. To take one example, *Hm* 75 is the most often positively chosen boy in class 7b.

Table 8.2. Principles of Code-Name Construction in Beta Basic

| | Part of the code-name | | | |
|---|---|---|---|---|
| | Root letters | | | Ending |
| | First letter | Second letter | Third letter | |
| General kind of information | indicates whether the subject belongs to the *H*-Sample or to the *L*-Sample | indicates to which of the Swedish grade levels the subject belongs | indicates the sex of the subject | indicates<br>(a) whether the subject is the most or the next most extreme selection of his kind in the class; and<br>(b) the specific class |
| Specific signs employed | *H*=*H*-Sample<br>*L*=*L*-Sample | *a*=grade 3<br>*e*=grade 4<br>*i*=grade 5<br>*o*=grade 6<br>*u*=grade 7<br>*y*=grade 8 | *m*=*m*ale<br>*f*=*fe*male | (a) endings containing *n* or *i* indicate next most extremes;<br>(b) disregarding *n* or *i*, no additional ending means *MF* Classes, *e* or *a* means *A* Classes, *o* or *u* *B* Classes |

## II. INTRODUCTORY DISCUSSION OF GENERAL PRINCIPLES FOR CHOICE OF TEST-SITUATIONS

When wishing to study possible relations between the sociopreferential status of specific individuals and different types of behavior and behavior tendencies of the same people, we come face-to-face with the problem of the selection of the most appropriate test-situations. Among the points of view which we then have to weigh against each other, we may mention the following: (a) the general suitability of the test-situations for school children aged 9—14; (b) the dependability of single test-situations as general or specific mirrors of behavior tendencies (intersubjective controllability; "reliability" and "validity"); (c) the fitness of the test-situations for the purpose of verifying specific hypotheses about sociometric choice status which have been or can be put forward ("exploration of the narrow and specific type"); and (d) the fitness of the test-situations for more broadly explorative purposes ("exploration of the broad and non-specific type").

Some tests which are suitable in a psychological laboratory are less convenient in the school situation because of the bulky apparatus. Some tests which are appropriate for adults are less fitted for children, for example, tests taking a long time or demanding great ability for putting ideas into words. Such considerations were of course operating as excluding factors when we selected our test-situations, but because of their obvious character we will not discuss them in any detail. A few more general reflections which guided us when making the present test selection will be presented in connection with the three latter points.

### 1. The General Dependability of the Test-Situations

When the investigator, equipped with some kind of working definition as his compass, wishes to find his way to suitable measurement techniques within the field of work vaguely referred to as personality study, he is apt to be confused by its bewildering complexity. And when he begins to study existing comparisons between different tests and different categories of clinical and non-clinical subjects, the old saying of the many who have been called and the few who have been chosen may echo in his thoughts and he may be inclined to agree with EYSENCK's aggressively eloquent words that the field is dominated by "ratings (in spite of their known unreliability), questionnaires (in spite of their known lack of validity), and so-called projective techniques which multiply in a horrifying Malthusian fashion . . . (in spite of the almost complete absence of proof that they measure anything whatever)" (1952, p. 69). In another survey of personality testing, we find a similar impression reported — although through a different temperament: "it is safer to be pessimistic regarding the future of personality testing in general" (VERNON 1953, p. 2). Such statements may be exaggerated; but as far as they encourage cautiousness, they are useful. This cautiousness should not necessarily restrict the freedom of using — for research purposes — new tests so far not sufficiently validated. Instead the cautiousness ought to mark the *interpretation* of test data, the phase of "translation" or "generalization". In this connection we will only refer to the general principles discussed above (chap. 3) in connection with the concepts "testproximal and testdistal variables", "scientific communication vehicles as data compressors", and "the analysis of specificity".

### 2. Exploration of the Narrow and Specific Type

An investigator seldom approaches a field of research without having at least some hypotheses — although perhaps not formulated explicitly — concerning the outcome of his investigation; this is seen by the fact that he discusses different findings in terms such as "self-evident", "interesting", or "surprising". If he has been trained in hypothetico-deductive methodology, he likes to clarify these hypotheses in a series of operational assumptions which, on the basis of experimental and statistical tests, are then verified or falsified. Although this procedure as often applied seems to reflect gradual constructions and afterthought rather than preplanning, it is obvious that, from the point of view of working economy, relatively clear hypotheses are needed for the purpose of selecting tests. But one must bear in mind that these hypotheses will perhaps be both refined and restructured during work.

In the subsequent paragraphs, we shall outline some relatively general hypotheses concerning relations between sociometric choice status of the kind discussed in the present investigations and different kinds of test behavior. There are three starting-points for these hypotheses: (a) general reflections about the specific kind of choice situation employed here; (b) a study of the motivations that the pupils gave for their choices; and (c) an analysis of certain earlier research results in this field. It is clear that such an analysis only makes possible relatively undetermined assumptions: the analysis of choice motivations is built on subjective and often unspecified statements, and the analysis of earlier research results based on very heterogeneous material (not only with respect to subjects employed, but also with respect to the status measure used and the specific tests utilized for comparison). However, although the whole discussion in this section is fairly vague and very hypothetical, such a general argument on a low level of preciseness seems to be of some use as a starting-point for the more strict analysis of test-situations to be made subsequently. Besides, as these general introductory analyses represent different approaches, they may be able to complement each other to a certain extent and moreover — where they overlap — to validate each other (in a non-technical sense).

In the introduction, it was mentioned that the sociopreferential status score is often assumed to be, among other things, correlated with measures of general "adjustment" and "efficiency" in the single individual. A very general formulation (the main "working hypothesis" for the Beta Experiments) may be given thus: individuals who receive many positive choices and few negative choices are expected to show greater efficiency in behavior related to the choice aspect employed than individuals who do not receive many positive choices and individuals who receive many negative choices. The general concept of "adjustment" seems closely related to efficiency in two respects: objective efficiency is often connected with subjective awareness of psychological health (an important aspect of "subjective adjustment" as often used), and efficient behavior in a specific situation is sometimes described as "good objective adjustment" (cf. also the expressions "verbal" and "non-verbal aspects of adjustment; see, e. g., Härnqvist 1956, p. 11 et seq.). In this connection, it may be of some help to regard with Wishner (1955), efficiency ($E$) as a function of the ratio of focused ($F$) to diffuse ($D$) activity, and of productivity ($P$), that is, $E = f(F/D, P)$. Focused activity is then defined as activity directly relevant to the task requirements, whereas diffuse activity is irrelevant activity.

Let us for a moment imagine that we are in the situation of the chooser. The pupil is instructed to select a working partner together with whom he or she is to work in class. Just as the word "co-work" is made up of the two components "co" and "work", the requirements of the good working partner may be of a two-fold nature: from him are required both "pure" *working* ability and *interaction* ability. Co-being experience may in both cases be a good guarantee: the dyadic motivations of the type "we live in the same block of flats", "we have been classmates from the beginning", etc., may therefore also be related to the general concept of efficiency. Working efficiency is of course important: the slow, the lazy, or the unintelligent is not very desirable as a partner in a work group — he does not take his share of the burden. But it is unlikely that the chooser only considers school proficiency: the unsociable "grind" or intellectual snob cannot be agreeable in the long run. Kindness, helpfulness and trustworthiness are important. The one who "sulks" or "easily goes to pieces" destroys the pleasure of the work. He may be efficient at his own work, but inefficient in interaction. Inactivity is a drawback, but irrelevant activity (quarrelling, fidgeting, etc.) is also a disadvantage. It is probable that some pupils do not really consider the working efficiency of the pupil, but selecting someone who is "great fun" can at least be regarded as choosing according to the principle of interaction efficiency.

When we look for results from earlier investigations in this field, we are perhaps above all surprised by the fact that research on individuals with extreme sociopreferential status scores has very seldom been made with a more detailed battery of tests. Most of the existing investigations are limited to a single test or to a very specific sample of subjects. In one recent survey of research in preferential sociometry, it is pointed out as a deficiency that there has been a "tendency to explore relations between sociometric findings and personality attributes 'at random', with little or no attempt to engage in conceptual analysis in advance of investigation to permit prediction of the kinds of variables that may be expected to associate with sociometric data" (Lindzey & Borgatta 1954,

p. 432). In another recent survey it is concluded that "the results thus far reported indicate that sociometric choices merit more intensive analysis as a basis for predicting a variety of performance criteria than they have yet received" (MOUTON, BLAKE, & FRUCHTER 1955 b, p. 204). The investigations so far made are, therefore, of unequal value. Nevertheless, it is of course also possible to perceive certain trends from such testing "at random" which may be used as a basis for predictions about results in the present project. There will be no attempt here to give a detailed survey of the earlier investigations (the reader is referred to the two recent surveys just quoted); but certain examples will be mentioned. In several investigations (e. g., BONNEY 1944, GROSSMANN & WRIGHTER 1948), high-status individuals have shown better performance on intelligence tests than low-status individuals, and sometimes also athletic ability has been shown to be positively related to the number of choices received (HUNT & SOLOMON 1942). Low-status individuals have been found to be engaged in the largest number of accidents not only in the school situation (FULLER & BAUNE 1951), but also in military surroundings (ZELENY 1947) and in industry (SPEROFF & KERR 1952). Guided by interviews and observations on low-status individuals, NORTHWAY (1944) concluded that it was possible to distinguish three distinct types of "outsiders": "recessive children" (low in energy), "socially disinterested children", and "socially ineffective children". Results from questionnaires of different kinds are not in complete agreement, but in several investigations the low-status category is found to be composed of problem individuals: they may show "maladjusted" replies as in the California Personality Test (BONNEY 1944), list a greater number of problems as in the Mooney Problem Check List (KUHLEN & BRETSCH 1947), or otherwise appear at a disadvantage in inventories for the ascertainment of mental health (BARON 1951). Investigations employing objective test data (projective tests or others) instead of only ratings or self-reports are relatively rare, and their results vary. In one Rorschach experiment (NORTHWAY & WIGDOR 1947), low-status individuals seem to show less ability to control their emotions. The introductory hypothesis about differences in efficiency seems plausible from these investigations, even though we must always remember that most experiments quoted are very different from each other and from the present one in subjects and preference aspects. Working efficiency is stressed in investigations of intelligence and accident proneness, both working efficiency and interaction efficiency in research on "adjustment", "mental disturbance", "impulsivity", etc. (cf. also BONNEY & POWELL 1953, BONNEY 1955). From the point of view of efficiency, it is possible to translate NORTHWAY's tripartition of low-status children thus: inactive through inability ("recessive"), inactive through lack of interest ("disinterested"), and irrelevantly active ("socially inefficient"; with diffuse rather than focused activity).

Guided by this general "efficiency hypothesis", it ought to be possible for us to give more specific hypotheses in most of the cases where we are confronted with a specific test, by bearing in mind this general argument: our "High Sample" individuals may more often be expected to give those reactions which are socially valued than will our "Low Sample" individuals. We expect from them greater school work ability, greater quality and quantity ambition, better "objective adjustment" to the norms and values of the relevant group, better ability for friction-free interaction with their peers, and (contributing to and/or as a consequence of the sociopreferential status; here a circular causality is probably at work) a better "subjective adjustment" (in the sense of the subject's satisfaction with himself and others).

### 3. Exploration of the Broad and Non-Specific Type

The hypothetical-deductive method is valuable for systematic purposes and often necessary to reduce our knowledge to order. On the other hand, used by itself, it may also have the effect of equipping the investigator with blinkers so that he does not see anything except what he is expecting to see. In a relatively unstructured field — as this one still is — it may also be of value to apply tests for explorative purposes without their having any direct connection with explicit hypotheses. What might possibly be found by so doing may then be more systematically investigated later on. It has therefore seemed important also to include in the present test battery a couple of tests of a broadly explorative character.

It has further been felt to be of value to use different approaches to the same or similar behavior complexes. It may be useful to explore the behavior of an individual on at least *three levels of report*: as the individual reports it himself (*self-report* level), as other individuals in his everyday surroundings report it (*peer-report* or *teacher-report* level), and as the experimenter reports it, starting from a more well-defined and specific test-situation (*experimenter-report* level). Thus we will employ self-rating in questionnaires, other-rating, and objective test data. Each approach has its advantages as well as its disadvantages; by applying them all on the same individuals (thus employing a *multi-level approach*) there is a higher degree of certainty that the results are dependable.

There are two bad ways of travelling. You may travel to your destination without seeing anything new. Or you may see so much that you forget your destination and lose your way in sight-seeing. Summing up this and the preceding section, we may say that we find it worthwhile to look for a middle way between the Scylla of that testing of pre-established hypotheses that may be characterized as rigid or blind on the one hand, and the Charybdis of hotch-potch case-studying and what has been called picturesquely "shot-gun correlationism" on the other. We will at least *try* this middle-way approach.

## III. SURVEY OF THE CATEGORIES OF VARIABLES INVESTIGATED

The final choice of variables to be investigated was made according to the general principles discussed in the preceding section. Table 8.3 gives a survey of those test-variables which will be analyzed in chap. 9.[2] The main categories are (a) sociopreferential variables reconsidered, (b) variables from the peer-report level of description, (c) variables from the teacher-report level of description, (d) variables from the self-report level of description, (e) experimenter-report level of description: variables from various general test-situations, and (f) experimenter-report level of description: variables from observation of behavior in group work situations.

## IV. THE GENERAL PROCEDURE

Most subjects of the Beta Basic Sample took part in ten sessions: one single-individual session, four group-test sessions, one experimental interaction session, and four group observation sessions. In all cases the present writer was the experimenter (observer).

[2] In the test battery given to the pupils, some tests were included which were not directly intended further to elucidate the correlation between choice status and other variables, but were given as much for the purpose of investigating the tests. The results of these tests, some of which are questionable as to their general dependability, will not be given in this report as a rule, but we hope to be able to publish parts of these findings in another connection. Thus, results from the Rorschach, the Szondi Test, the Tree Test, the Color Pyramid Test, and a few interaction tests will not be reported at all in the present text, whilst results from the Music Preference Test will be referred to only in passing. In some of these cases the primary reason for not reporting them here — e. g., for the Rorschach and the interaction tests — is not that they would not be of interest in the present connection, but rather that the theory and/or methodology is so complicated that a clear non-routine exposition would take up an undue amount of space here. — In the present report we follow a cross-individual analysis of different tests; in a later publication we hope to supplement this approach by giving a cross-test analysis of single individuals, thereby also utilizing some data from the tests not discussed here.

Table 8.3. Preliminary Survey of the Main Categories of Variables and the Test-Situations to Be Analyzed in Chapter 9

A. *Sociopreferential variables reconsidered*
  a. The workmate choosing: The basic sociopreferential variables
  b. Other choice situations: Choice status variables

B. *Variables from the peer-report level of description*
  a. The Peer-Description Device: Object-directed analysis
  b. The Peer-Description Device: Subject-directed analysis

C. *Variables from the teacher-report level of description*
  a. General teacher rating
  b. Teacher rating of co-working variables
  c. Teachers' marks

D. *Variables from the self-report level of description*
  a. The *N* Questionnaire
  b. The California Test of Personality
  c. The Junior Personality Quiz

E. *Experimenter-report level of description: Variables from various general test-situations*
  a. Intelligence tests: Verbal and non-verbal situations
  b. Test-situations related to "perseveration" and "speed"
  c. "Dishonesty-inducing" situations
  d. "Superego-blocking" situations
  e. The Music Preference situation
  f. The Body Sway situation

F. *Experimenter-report level of description: Variables from observation of behavior in group work situations*
  a. Classroom situations
  b. Experimental small group situations
    (1) "The Complicated Exchange Task"
    (2) "The Eight Stories"
    (3) "The Item Estimation Task"

The sub-division into the *MF* Part (48 pupils) and the *AB* Part (88 pupils) within Beta Basic should be remembered for two reasons: (a) firstly, certain tests were only used in the *AB* Part; and (b) secondly, the sessions were given with a longer interval between them in the *MF* Part. Whilst the total series of sessions was applied in one school term in the *AB* Classes (spring 1954), the sessions in the *MF* Classes were spread over three terms — primarily because of the fact that the test battery was tried out gradually (autumn 1952, spring 1953 and autumn

1953).[3] In all cases sociopreferential testing was made shortly before the intensive test sessions (in the *MF* Classes the subjects were thus selected on the basis of the first sociopreferential testing but the choice situation was readministered twice). The testing in the Beta Extra Classes was done in spring 1953 (class *X*, girls, grade 4) and in autumn 1953 (class *U*, girls, grade 5; class *V*, boys, grade 5).

We will not give any detailed description of the single test-situations here. Instead, each section of the chapter on data analysis will give the necessary information. This has the advantage that the reader has all the pertinent data in one place and does not need to refer to an earlier chapter in order to understand a specific test-situation.

[3] The age distribution is therefore greater in the *MF* Part, which in most cases is of no great importance, since this factor affects the High Sample and the Low Sample to the same degree.

## CHAPTER 9

# EXTRA-SOCIOPREFERENTIAL CORRELATES

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## I. METHODS OF DATA ANALYSIS: GENERAL PRESENTATION

The quantitative analysis of test results, of course, followed different methods for different tests: specific demonstrations will be given below for the various cases. This introductory section is designed to give an idea of the common principles for analysis and for the construction of the tables.

The aim of the analysis is, of course, to express quantitatively differences between the two extreme categories of subjects in Beta Basic and Beta Restricted, as well as the possible co-variation between the sociopreferential and the extra-sociopreferential variable in the Beta Extra Classes. It seems, then, natural to use $t$ analysis in order to be able to give statements of significance about the differences between the means of the extreme categories, and to make use of product moment correlation as a measure of the co-variation in the total classes. These procedures may also be suitable in many cases. However, we may, *a priori*, expect to obtain several deviations from normal distributions. The arithmetical operations of both $t$ analysis and product moment correlation can of course also be made in these cases, but the interpretations will be doubtful, and the statistical characteristic may give false indications or tell us nothing. Instead chi-square calculations (corrected for continuity) have been used for significance statements all through this chapter, and the co-variation is illustrated both with means (or series of means) and with percentages. A few examples will demonstrate the detailed procedure.

For a specific test variable each individual has a score. This is marked out in a double-directed histogram of the general type illustrated in Figure 9.1. Values of individuals belonging to the High Sample are placed *above* the variable scale, values of individuals belonging to the Low Sample *below* the variable scale. From the resulting distribution, a certain idea of the kind and degree of the possible co-variation is already obtained. Thus, in the present case (the hypothetical variable $U$ shown in the figure) we find that values of the Low Sample have assembled around

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  | H |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | H |  |  |  |  | H |  |  |  |  |  |  |  |
| *Hm* |  |  |  |  | H | H |  |  |  | H |  |  |  |  |  |  |  |
|  |  |  | H | H | H | H |  |  |  | H |  |  |  |  |  |  |  |
|  |  |  | H | H | H | H | H | H |  | H | H |  |  |  |  | H |  |
|  |  | H | H | H | H | H | H | H | H | H | H | H |  | H |  | H | H |
| *U* | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|  | L | L | L | L | L | L | L |  |  | L | L |  |  |  |  |  |  |
|  | L | L | L | L |  | L | L |  |  |  |  |  |  |  |  |  |  |
|  | L | L | L | L |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Lm* | L | L | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | L | L | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | L | L | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | L |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Number of individuals:

|  | *l* | *h* | *T* |
|---|---|---|---|
| *Hm* | 7 | 27 | 34 |
| *Lm* | 27 | 7 | 34 |
| *T* | 34 | 34 | 68 |

Percentages:

|  | *l* | *h* |
|---|---|---|
| *Hm* | 21 | 79 |
| *Lm* | 79 | 21 |
| *T* | 100 | 100 |

*Key:* *U* = a hypothetical extra-sociopreferential variable
*Hm* = the *Hm* Sample (cf. chapter 8)
*Lm* = the *Lm* Sample (cf. chapter 8)
*H* = one individual with high sociopreferential status
*L* = one individual with low sociopreferential status
*h* = "high-scorers" on the extra-sociopreferential variable
*l* = "low-scorers" on the extra-sociopreferential variable

Fig. 9.1. An example of a double-directed histogram for the analysis of differences between two choice status samples on an extra-sociopreferential variable (a comparison between the *Hm* Sample and the *Lm* Sample with respect to the hypothetical variable *U*).

the low values of the scale (mean = 2.5), while the values of the High Sample lie somewhat higher (mean = 6.7). The difference seems fairly clear, but a certain overlap exists. Let us suppose, that, from the results of the extra-sociopreferential variable *U*, we want to try to predict which individuals belong to the High-Status Sample and which to the

Low-Status Sample. How accurate could this prediction be in the present case? We start with the hypothesis that low values of the *U*-scale are associated with low sociopreferential status scores. Our prediction would in this case, then, mean that if a section line is drawn through the middle of the total distribution on both sides of the central scale, dividing it into one *U*-low and one *U*-high part, the *U*-low individuals should belong to the sociopreferential Low Sample (cf. the section line in the figure). The distribution is summed up in a four-field table, and this may be translated into a percentage table. Of the 34 *U*-low individuals, 27 (or 79 %) belong to the sociopreferential Low Sample and 7 (or 21 %) to the sociopreferential High Sample, while of the *U*-high individuals 7 (or 21 %) belong to the sociopreferential Low Sample, and 27 (or 79 %) to the sociopreferential High Sample. In cases where no co-variation exists between the sociopreferential and the extra-sociopreferential variable, we expect a 50—50 distribution; in the case of perfect prediction a 0—100 distribution. A chi-square analysis of the raw values gives us an idea whether the distribution obtained differs significantly from a chance one. In the present case this is very clearly so ($P < .001$).

In the tabular compression, our data in this case would be stated in the following form:

| Var. | Cat. | $M_H$ | $M_L$ | $H\%l$ | $H\%h$ | $Tl+Th$ | $DD$ | $P$ |
|---|---|---|---|---|---|---|---|---|
| *U* | M | 6.7 | 2.5 | 21 | 79 | 34 + 34 | ++ | $< .001$ |

The table is read as follows: For variable *U* the values of the boys ($M$ = male) are so distributed that the mean of the sociopreferential High Sample ($M_H$) is 6.7, and the mean of the sociopreferential Low Sample ($M_L$) is 2.5. Of the *U*-low category, 21 % belong to the High-Status Sample ($H\%l$ = percentage of *U*-*l*ow individuals belonging to the *H*igh-Status Sample); of the *U*-high category, 79 % belong to the High-Status Sample ($H\%h$ = percentage of *U*-*h*igh individuals belonging to the *H*igh-Status Sample). Capital *H* and *L* are used for the "High Sample" and the "Low Sample" of Beta Basic; small *h* and *l* are used to denote the high category and the low category of the specific variable under investigation (in this case the hypothetical variable *U*). It is not stated in the table how great is the percentage of Low Sample individuals in the *U*-high and *U*-low categories, as this is immediately understood from the data already given ($L\%l = 100 - H\%l$; $L\%h = 100 - H\%h$). On the other hand,

$H\%l + H\%h$ is not necessarily equal to 100; the section line cannot always be so drawn that the same number of individuals fall on each side: it is drawn as near to this position as possible. In order that the reader may always have an idea of how many individuals the calculation of percentages is based on, the *t*otal number of individuals in the *l*ow category and the *h*igh category of the specific variable is given ($Tl + Th$); this column also gives an idea of the position of the section line. The signs below the heading *DD* give a conception of the *d*irection of the *d*ifferences. A difference which bears out the hypothesis is symbolized by +, a difference in the opposite direction is symbolized by —; no difference with 0. The first symbol refers to the difference between the means, the second symbol to the difference between the percentages. In cases where the differences are small and the distribution uneven, these two kinds of differences do not necessarily go in the same direction. Sign of direction is given also for nonsignificant differences. These may be of interest, when they go in the same direction as the significant ones. The last column (*P*) gives the probability values estimated by chi-square calculations (corrected for continuity).

In the Beta Extra Classes, a subdivision is made into four levels of choice status (*A*, *B*, *C*, and *D*), where *A* represents the most positively chosen, and *D* the least positively chosen, and means are calculated for each level. In this case also the *P*-values are estimated from four-field tables with the aid of chi-square calculations, in which $A + B$ are treated as one category ("much chosen") and $C + D$ as another ("little chosen"). The tabular condensation for our hypothetical variable *U* may, for example, have the following form:

| Var. | Class | $M_A$ | $M_B$ | $M_C$ | $M_D$ | $AB\%l$ | $AB\%h$ | $Tl+Th$ | DD | P |
|---|---|---|---|---|---|---|---|---|---|---|
| *U* | X | 25.8 | 8.7 | 7.6 | 4.1 | 32 | 75 | 19 + 16 | + + + | .03 |

The means here show values decreasing consistently from the most chosen (*A*) to the least chosen (*D*). The percentages show that the high *U*-values clearly belong to the higher sociopreferential levels ($AB\%h = 75$). In the Beta Extra classes we use three signs for direction of differences: the first denotes the difference between $M_A$ and $M_D$, the second the characteristics of the total series of means ($M_A$, $M_B$, $M_C$, and $M_D$), and the third the difference between the percentages. Before giving + for the direction of differences when we deal with the total series of means, we have demanded a consistent development of the type illustrated here, whilst a varying series, such as, for instance, 20 — 8 — 10 — 5, which also mainly goes in the same direction, is denoted by 0.

Sometimes we see that the values of the extra-sociopreferential variables are systematically changed from lower to higher grade levels. In such cases it is possible that a real difference existing between High-Status individuals and Low-Status individuals on the same grade level is made less clear when the total group is taken into consideration. In some of these cases we have made a rough "grade level correction" by employing relative instead of absolute scores. This is accomplished in the following simple way: separate histograms are made for each grade level and section lines drawn on these. The resulting four-field tables are then simply added together for the final analysis. When this procedure is employed, we always indicate it in the text or in the table. — Girls and boys are as a rule analyzed separately in Beta Basic, but together in Beta Restricted because of the smaller samples (the *R* often given in the second column of the tables means boys and girls in Beta *R*estricted). In the latter case a "sex correction" analogous to the grade level correction is always made, that is, each sex is first analyzed separately and the two four-field tables are added together afterwards.

For the reader's convenience, the most usual symbols in the subsequent tables (referred to in the text above) are listed in Table 9.1.

## II. AN INTRODUCTORY RECONSIDERATION OF SOCIOPREFERENTIAL VARIABLES

### 1. The Basic Sociopreferential Variables in the Workmate Choice

As has been mentioned above, our main differentiation of the pupils into two extreme categories is based on the number of positive and negative choices received. The present section is designed to demonstrate the empirical distribution of our extreme categories both in Beta Basic and in Beta Restricted with respect to these two variables as well as to the other basic sociopreferential variables. The symbols of the different variables are the same as have been used above: $p$, $\bar{p}$, $\bar{\bar{p}}$, $n$, $\bar{n}$, $\bar{\bar{n}}$ (cf. Table 3.3).

Figures 9.2—9.7 give double-directed histograms for the variables $\bar{p}$ and $\bar{n}$. The pupils have been symbolized with the short-form code-names (two-digit numbers; cf. chap. 8: I above) in the complete registration of

Table 9.1. Key to the Most Usual Symbols in the Tables of Chapter 9

| Symbol | Refers to |
|---|---|
| $M_H$ | *M*ean score of *H*igh-Status Sample in Beta Basic (or Beta Restricted) |
| $M_L$ | *M*ean score of *L*ow-Status Sample in Beta Basic (or Beta Restricted) |
| $M_A$, $M_B$, $M_C$, $M_D$ | *M*ean score of the different status categories in a Beta Extra class (each class being divided into four status categories: *A*, *B*, *C*, and *D*; *A* representing the most chosen and *D* the least chosen pupils) |
| $H\%l$ | The percentage of pupils with *l*ow scores in the variable considered ("low-scorers") belonging to the *H*igh Sample of Beta Basic (or Beta Restricted) |
| $H\%h$ | The percentage of pupils with *h*igh scores in the variable considered ("*h*igh-scorers") belonging to the *H*igh Sample of Beta Basic (or Beta Restricted) |
| $AB\%l$ | The percentage of pupils with *l*ow scores in the variable considered ("*l*ow-scorers") belonging to status category *A* or status category *B* ("much chosen") of a Beta Extra class |
| $AB\%h$ | The percentage of pupils with *h*igh scores in the variable considered ("*h*igh-scorers") belonging to status category *A* or status category *B* ("little chosen") of a Beta Extra class |
| $Tl+Th$ | *T*otal number of *l*ow-scorers plus *t*otal number of *h*igh-scorers with respect to the variable considered |
| $DD$ | *D*irection of *d*ifferences (+ denotes a difference in the expected direction, — a difference in the non-expected direction, *o* no difference). In Beta Basic and Beta Restricted two signs are given: the first refers to the difference between means, the second to the difference between percentages. In the Beta Extra classes three signs are given: the first refers to the difference between the mean score of status category *A* and the mean score of status category *D*, the second to the whole series of mean scores (status categories *A*, *B*, *C*, and *D*), and the third to the difference between percentages. |
| $P$ | *P*robability values estimated by means of chi-square calculations corrected for continuity. |
| $M$ | *M*ale subjects |
| $F$ | *F*emale subjects |
| $R$ | Subjects belonging to Beta *R*estricted |

| $\overline{p}$ | 32 | 34 | 36 | 38 | 40 | 42 | 44 | 46 | 48 | 50 | 52 | 54 | 56 | 58 | 60 | 62 | 64 | 66 | 68 | 70 | 72 | 74 | 76 | 78 | 80 | 82 | 84 | 86 | 88 | 90 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Hm* | | | | | | | | | | | | 82<br>34 | 72<br>64 | 86<br>76 | 66 | 81<br>74<br>56<br>42<br>41 | 73<br>62<br>44<br>32 | 85<br>75<br>46 | 33 | 71<br>65<br>51<br>43<br>36<br>31 | | 54 | 53<br>52 | 84<br>63<br>61<br>55<br>45<br>35 | | | | | | 83 |
| *Lm* | 33<br>71 | 34<br>36<br>75<br>86 | 43<br>53<br>55<br>61<br>72 | 31<br>44<br>51<br>52<br>54<br>62<br>66<br>74<br>85 | 32<br>35<br>41<br>42<br>45<br>46<br>63<br>64<br>65<br>76<br>83<br>84 | 56<br>81 | 73 | | 82 | | | | | | | | | | | | | | | | | | | | | |

Fig. 9.2. The distribution of Beta Basic boys on positive choices received ($\overline{p}$).
(Code-names, cf. chap. 8: I)

| $\overline{p}$ | 30 | 32 | 34 | 36 | 38 | 40 | 42 | 44 | 46 | 48 | 50 | 52 | 54 | 56 | 58 | 60 | 62 | 64 | 66 | 68 | 70 | 72 | 74 | 76 | 78 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Hf* | | | | | | | | | | | | 84<br>51 | 82<br>36 | 83<br>54 | 62<br>61<br>52 | 86<br>72<br>56 | | 74<br>55<br>53<br>46<br>35 | 81<br>71<br>44 | 76<br>66<br>64<br>41<br>31 | 65<br>43<br>42<br>32 | 85<br>75<br>73<br>63<br>34 | | | 45<br>33 |
| *Lf* | 81 | 61<br>85 | 33<br>34<br>65<br>73 | 41<br>55<br>71 | 32<br>43<br>44<br>51<br>52<br>53<br>62<br>64<br>66<br>72<br>83 | 45<br>75<br>76<br>84<br>86 | 42<br>46<br>54<br>63<br>74<br>82 | 31<br>56 | | | 35<br>36 | | | | | | | | | | | | | | |

Fig. 9.3. The distribution of Beta Basic girls on positive choices received ($\overline{p}$).

| $\bar{n}$ | 38 | 40 | 42 | 44 | 46 | 48 | 50 | 52 | 54 | 56 | 58 | 60 | 62 | 64 | 66 | 68 | 70 | 72 | 74 | 76 | 78 | 80 | 82 | 84 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Hm* | 36<br>35 | 76<br>55 | 86<br>85<br>83<br>64<br>63<br>54<br>52<br>51<br>42<br>41<br>34<br>33<br>32<br>31 | 74<br>73<br>72<br>71<br>62<br>61<br>56<br>43 | 82<br>81 | 84<br>46<br>45 | 53 | 44 |  | 66<br>65 |  | 75 |  |  |  |  |  |  |  |  |  |  |  |  |
| *Lm* |  |  | 66<br>86 | 61<br>62<br>72<br>74 | 82 |  | 43<br>44<br>54<br>64 | 81 | 71 | 34<br>65 | 36<br>63 | 45<br>46<br>76 | 33<br>85 | 35 | 52 | 41<br>42<br>73 | 56 | 75 | 32<br>55 | 51<br>53 | 84 |  | 83 | 31 |

Fig. 9.4. The distribution of Beta Basic boys on negative choices received ($\bar{n}$).

| $\bar{n}$ | 38 | 40 | 42 | 44 | 46 | 48 | 50 | 52 | 54 | 56 | 58 | 60 | 62 | 64 | 66 | 68 | 70 | 72 | 74 | 76 | 78 | 80 | 82 | 84 | 86 | 88 | 90 | 92 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Hf* | 35 | 76<br>75<br>56<br>55 | 84<br>83<br>66<br>65<br>63<br>53<br>52<br>51<br>41<br>34<br>32<br>31 | 74<br>73<br>72<br>71<br>62<br>61<br>43<br>36 | 82<br>81<br>42 | 54<br>46<br>44 | 64 | 33 |  |  |  | 45 | 86<br>85 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| *Lf* |  |  | 66<br>84<br>85 | 72 |  |  |  | 52<br>83 | 56<br>71 | 32<br>65 | 55 | 46 | 74<br>86 | 36 | 31<br>76 | 82 |  | 34<br>35<br>75 | 41<br>42 | 44<br>53<br>54<br>64 |  | 51<br>61<br>62 | 33 |  |  | 63 |  | 43<br>45<br>73<br>81 |

Fig. 9.5. The distribution of Beta Basic girls on negative choices received ($\bar{n}$).

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | H | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | H | | | | | | | | | | |
| Hr | | | | | | | | | | | | | | | | | | H | | | H | | | | | | | | | | |
| | | | | | | | | | | | | | | | | H | H | | | H | | | | H | | | | | | |
| | | | | | | | | | | | | | | | | H | H | | H | H | H | | | H | | | | | | |
| | | | | | | | | | | | | | | | | H | H | H | H | H | H | | | H | | | | | | |
| | | | | | | | | | | | | | | | H | H | H | H | H | H | H | H | H | H | | | | | | H |
| $\bar{p}$ | 30 | 32 | 34 | 36 | 38 | 40 | 42 | 44 | 46 | 48 | 50 | 52 | 54 | 56 | 58 | 60 | 62 | 64 | 66 | 68 | 70 | 72 | 74 | 76 | 78 | 80 | 82 | 84 | 86 | 88 | 90 |
| | L | L | L | L | L | L | L | L | | | | | | | | | | | | | | | | | | | | | | | |
| | | L | L | L | L | L | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | L | L | L | L | L | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | L | L | L | L | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lr | | | | L | L | L | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | L | L | L | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | L | L | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | L | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | L | | | | | | | | | | | | | | | | | | | | | | | | | |

Fig. 9.6. The distribution of Beta Restricted pupils on positive choices received ($\bar{p}$).

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | H | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | H | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | H | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | H | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | H | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | H | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | H | H | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | H | H | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | H | H | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | H | H | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | H | H | | | | | | | | | | | | | | | | | | | | | | | | |
| Hr | | H | H | H | | | | | | | | | | | | | | | | | | | | | | | | |
| | | H | H | H | | | | | | | | | | | | | | | | | | | | | | | | |
| | H | H | H | H | H | | | | | | | | | | | | | | | | | | | | | | | |
| | H | H | H | H | H | | | | | | | | | | | | | | | | | | | | | | | |
| $\bar{n}$ | 38 | 40 | 42 | 44 | 46 | 48 | 50 | 52 | 54 | 56 | 58 | 60 | 62 | 64 | 66 | 68 | 70 | 72 | 74 | 76 | 78 | 80 | 82 | 84 | 86 | 88 | 90 | 92 |
| | | | | | | | L | L | L | L | L | L | L | | L | L | | L | L | L | | L | L | L | | | | L |
| | | | | | | | L | | L | L | L | | | | L | L | | L | L | L | | L | L | | | | | L |
| | | | | | | | | | | | L | | | | | | | L | | L | | | | | | | | |
| Lr | | | | | | | | | | | | | | | | | | | | L | | | | | | | | |

Fig. 9.7. The distribution of Beta Restricted pupils on negative choices received ($\bar{n}$).

Beta Basic and with *H's* and *L's* in the figures dealing with Beta Restricted. The variable scale is in this case expressed in standard scores. From the diagrams we see that we obtain wholly separate categories of pupils with respect to the $\overline{p}$-scores, not only in Beta Restricted, but also in Beta Basic (although for a few individuals the difference between High-Sample values and Low-Sample values are not very important). With the $\overline{n}$-scores, we get equally clear differences in Beta Restricted, but not in Beta Basic, a fact which can be put down to the more liberal principles of selection. In the Beta Basic High Sample, most individuals are assembled on the zero value, but even in the low category there are individuals without rejections received (it is to be noted that this mainly occurs in the higher classes), and a few High-Status individuals receive one or several rejections.

Table 9.2 compresses the values of the extreme categories in all the six basic sociopreferential variables. Because of the principles of selection, it is not surprising that the differences in positive and negative choices received are highly significant. With respect to positive choices reciprocated ($\overline{\overline{p}}$), we expect that the High-Sample individuals will predominate; with respect to negative choices reciprocated ($\overline{\overline{n}}$), we expect the Low-Sample individuals to receive the largest number. This is relatively self-evident from the positive correlation demonstrated (partly logically necessary) between choices received and choices reciprocated. What about choices given? As positive expansivity is often regarded as desirable, whereas, as a rule, negative expansivity is not, our initial efficiency hypothesis could guide us to guess that our High-Status pupils are more positively expansive, and our Low-Status pupils more negatively expansive. As to $p$ all differences go in the expected direction, as to $n$ the direction varies; in no case, however, the differences are significant. This does not surprise us: although high positive expansivity may be thought to be among the *causes* of a high sociopreferential status, nevertheless a lessened positive expansivity may be a *consequence* of such a position. — Table 9.3 illustrates $\overline{p}$-scores and $\overline{n}$-scores in the Beta Extra Classes. In these classes the differentiation into status levels was made wholly from the $\overline{p}$-variable; but the $\overline{n}$-variable also tends to show differences in the expected direction.

Table 9.4 gives a chess-board tabulation of the pupils of the extreme categories (for the principles of the basic chess-board diagram, the reader is referred to chap. 3). The numbers of the Low-Status Sample are given within brackets. It is interesting here to note, above all, the concentration of individuals on certain patterns (which we may expect already from the specific pattern of positive and negative correlations between the six basic

Table 9.2. The Basic Sociopreferential Variables
(Beta Basic and Beta Restricted)

| Var. | Cat. | $M_H$ | $M_L$ | $H\%l$ | $H\%h$ | $Tl+Th$ | $DD$ | $P$ |
|---|---|---|---|---|---|---|---|---|
|  | M | 50.52 | 47.22 | 47 | 53 | 36+36 | ++ | >.3 |
| $p$ | F | 48.39 | 47.31 | 49 | 53 | 37+34 | ++ | >.3 |
|  | R | 50.72 | 47.09 | 48 | 52 | 33+31 | ++ | >.3 |
|  | M | 67.94 | 38.56 | 0 | 100 | 36+36 | ++ | <.001 |
| $\bar{p}$ | F | 65.28 | 39.31 | 0 | 100 | 36+36 | ++ | <.001 |
|  | R | 69.84 | 37.56 | 0 | 100 | 32+32 | ++ | <.001 |
|  | M | 61.28 | 40.00 | 6 | 94 | 36+36 | ++ | <.001 |
| $\bar{\bar{p}}$ | F | 58.69 | 40.43 | 8 | 94 | 36+35 | ++ | <.001 |
|  | R | 61.66 | 39.56 | 3 | 97 | 32+32 | ++ | <.001 |
|  | M | 47.72 | 48.31 | 51 | 49 | 35+37 | ++ | >.3 |
| $n$ | F | 51.56 | 48.66 | 44 | 57 | 34+37 | −− | >.3 |
|  | R | 49.00 | 48.03 | 50 | 50 | 34+30 | −0 | >.3 |
|  | M | 45.11 | 60.58 | 80 | 22 | 35+37 | ++ | <.001 |
| $\bar{n}$ | F | 45.75 | 68.39 | 89 | 11 | 36+36 | ++ | <.001 |
|  | R | 43.03 | 68.97 | 100 | 0 | 32+32 | ++ | <.001 |
|  | M | 47.88 | 55.53 | 60 | 29 | 43+21 | ++ | .03 |
| $\bar{\bar{n}}$ | F | 49.59 | 57.52 | 59 | 36 | 41+22 | ++ | .2 |
|  | R | 46.88 | 60.66 | 65 | 25 | 40+24 | ++ | .005 |

Table 9.3. The Basic Sociopreferential Variables: Positive and Negative Choices Received
(Beta Extra: X, U, V)

| Var. | Class | $M_A$ | $M_B$ | $M_C$ | $M_D$ | $AB\%l$ | $AB\%h$ | $Tl+Th$ | $DD$ | $P$ |
|---|---|---|---|---|---|---|---|---|---|---|
|  | X | 63.5 | 47.9 | 44.9 | 41.1 | 0 | 100 | 15+17 | +++ | <.001 |
| $\bar{p}$ | U | 55.8 | 52.0 | 48.5 | 43.7 | 0 | 100 | 14+14 | +++ | <.001 |
|  | V | 56.0 | 50.7 | 48.2 | 45.4 | 6 | 100 | 16+14 | +++ | <.001 |
|  | X | 45.5 | 46.4 | 51.2 | 58.5 | 67 | 41 | 15+17 | +++ | .3 |
| $\bar{n}$ | U | 43.2 | 45.1 | 49.7 | 62.3 | 83 | 25 | 12+16 | +++ | .008 |
|  | V | 46.1 | 48.1 | 47.8 | 58.6 | 56 | 42 | 18+12 | +0+ | >.3 |

sociopreferential variables). Thus, of the Beta Basic High Sample no less than 83 % of the boys and 72 % of the girls belong to one of the four most "pure" positive patterns (+++ −−−, +++ +−−, −++ −−−, or −++ +−−), which means that 78 % of the pupils fall within four of the thirty-two possible cells (e.g., within 12.5 %

Table 9.4. Chess-Board Tabulation of Beta Basic and Beta Restricted Individuals

| | 1 +++ | 2 −++ | 3 +−+ | 4 ++− | 5 −−+ | 6 −+− | 7 +−− | 8 −−− |
|---|---|---|---|---|---|---|---|---|
| VIII +++ | | | | | | 1 | 5 | 10 |
| VII −++ | 2 | | | 1 | | 1 | 4 | 11 |
| VI +−+ | | | | (1) | | | | (1) |
| V ++− | | | | | | | | |
| IV −−+ | | | | | | | | |
| III −+− | | | | | | | | 1 |
| II +−− | (4) | (1) | | (2) | | (3) | (1) | (2) |
| I −−− | (5) | (1) | | | | (12) | (1) | (2) |

a. Beta Basic: Boys

| | 1 +++ | 2 −++ | 3 +−+ | 4 ++− | 5 −−+ | 6 −+− | 7 +−− | 8 −−− |
|---|---|---|---|---|---|---|---|---|
| VIII +++ | 1 | | | 1 | | | 6 | 6 |
| VII −++ | | | 3 | 1 | | 1 | 7 | 7 |
| VI +−+ | (1) | | | | | | | |
| V ++− | | | | | | 1 | 1 | |
| IV −−+ | | | | | | (1) | | |
| III −+− | | | | | | | | 1 |
| II +−− | (3) | (2) | | (1) | | (4) | | (3) |
| I −−− | (3) | (2) | | (3) | | (12) | | (1) |

b. Beta Basic: Girls

| | 1 +++ | 2 −++ | 3 +−+ | 4 ++− | 5 −−+ | 6 −+− | 7 +−− | 8 −−− |
|---|---|---|---|---|---|---|---|---|
| VIII +++ | | | | | | | 4 | 5 |
| VII −++ | | | | | | | 3 | 6 |
| VI +−+ | | | | (1) | | | | |
| V ++− | | | | | | | | |
| IV −−+ | | | | | | | | |
| III −+− | | | | | | | | |
| II +−− | (2) | (1) | | (1) | | (3) | | |
| I −−− | (4) | | | | | (6) | | |

c. Beta Restricted: Boys

| | 1 +++ | 2 −++ | 3 +−+ | 4 ++− | 5 −−+ | 6 −+− | 7 +−− | 8 −−− |
|---|---|---|---|---|---|---|---|---|
| VIII +++ | | | | | | | 3 | 2 |
| VII −++ | | | | | | | 3 | 4 |
| VI +−+ | | | | | | | | |
| V ++− | | | | | | | 1 | |
| IV −−+ | | | | | | | | |
| III −+− | | | | | | | | 1 |
| II +−− | (1) | (2) | | | | (2) | | |
| I −−− | (3) | (1) | | | | (5) | | |

d. Beta Restricted: Girls

*Key:* Numbers without brackets: High-Status Pupils
Numbers within brackets: Low-Status Pupils
For the construction of the Basic Chess-Board Diagram, cf. chap. 3.

of the surface theoretically possible; "theoretically possible" covering every type with high $\bar{p}$-score). The individuals in the Low Sample of Beta Basic are somewhat less concentrated. The largest number of individuals belong to pattern ——— +++ (the "pure" negative type) and ——— —+— (the rejected individual with low negative expansivity and low negative reciprocity). The concentration of individuals is of course still more conspicuous in Beta Restricted (94 % of the High Sample in the four cells mentioned).

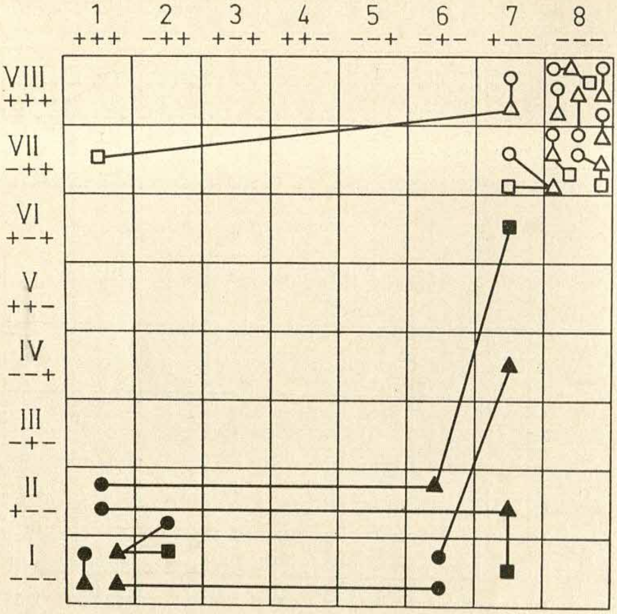
Figures 9.8 and 9.9 illustrate the relative stability of this kind of multivariable position on the chess-board diagram (the *MF* Part of Beta Restricted). There is no confusion of High-Status and Low-Status pupils either after a four-month interval, or after a thirteen-month interval.

## 2. Choice Status in Other Choice Situations

For the most part we have discussed sociopreferential status scores calculated from workmate choosing. However, now that we are going to examine possible behavioral differences between two extreme groups of individuals selected from this choice situation, we are of course interested to know how specific our differentiation is. Will the differences we may obtain be valid for this specific choice situation only or do they have a more general character? In order to obtain some idea about this we have investigated how our sociopreferentially extreme categories of individuals are distributed in relation to three other status variables, based on three fairly different kinds of choice situation: *F* (friendship reports), *R* (choice of recess companions), and *L* (choice of leaders for the work groups).

On the basis of the correlations between different choice aspects reported above (chapter 6), we expect that these other choice situations will produce fairly clear differentiation between our High and Low Samples. The results (Figures 9.10—9.12 and Table 9.5) are also very clear: all the differences go in the expected direction and are highly significant (in the Beta Extra Classes [Table 9.6] we also obtain several very clear differences). In Beta Basic and Beta Restricted, we obtain in most cases almost total cleavage (strong approximation to a 0—100 distribution). The children having high status in the workmate choices are not only more *sought after* as playground companions than are the children with low status in the workmate choices, but they are also reported more often as being *actual* companions during the recess (Table 9.7).

These different results speak in favor of the conception that the sociopreferential choice situation employed has not been of too specific a character. The results below about extra-sociopreferential correlates are, therefore, not to be considered to be wholly limited to the present kind of sociopreferential choice situation.



*Key:* a circle: position at first test
a triangle: position at second test
a square: position at third test
unfilled symbols: *Hr* Sample
filled symbols: *Lr* Sample

Fig. 9.8. The stability of multi-variable position on the Chess-Board Diagram. (Beta Restricted: Boys from the *MF* Classes)

### III. PEER-REPORT LEVEL OF DESCRIPTION

The category of variables most similar to the sociopreferential assessment in choice situations is the category of peer-descriptions. To expect an absolutely *objective* description in this case would, of course, be unreasonable: we must merely recall the partly overlapping truisms that different individuals show highly different ability at evaluating others (cf., e. g., the survey given by TAFT in 1955), at understanding rating scales, and at preventing personal preferences from influencing the description. But this less objective picture may also be of a certain interest in our case; to some extent, it helps to answer the question: What impression does this pupil make on his surroundings? We have to remember, however, that peer-description statements may be given a double-

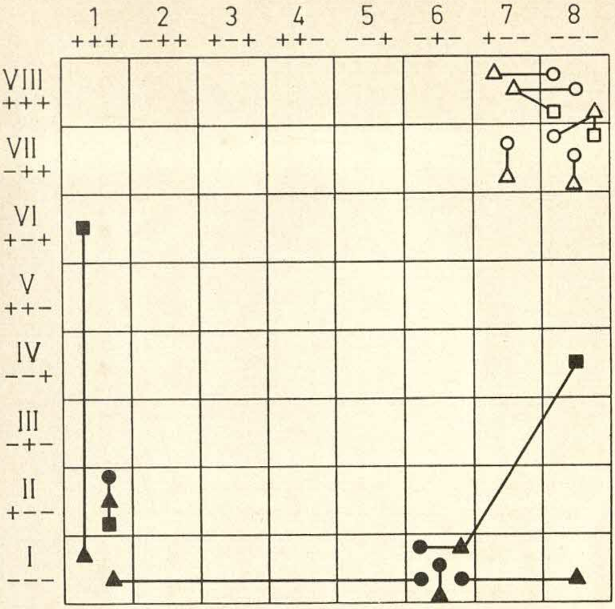


Fig. 9.9. The stability of multi-variable position on the Chess-Board Diagram. (Beta Restricted: Girls from the *MF* Classes)

directed treatment: on the one hand, such statements aim at describing the behavior of other people, on the other hand, they are also so intimately associated with the communicator that they may describe him too. In some respects one way of analyzing them may be the most promising, in other respects the other way is the only possible one (cf. BJERSTEDT 1955 a).

## 1. The Construction of a Peer-Description Device

On the basis of the analysis of choice motivations, we constructed a simple peer-description device by choosing characteristic motivations with reference to different kinds of behavior or behavior tendencies which were given a positive or negative evaluation. An attempt was made to retain the expressions of the children as far as possible, but, of course, they do not always lend themselves to accurate translation. The finished form consisted of 36 items which were intentionally arranged unsystematically. However, the construction of the form will be clear from the following list (the figure after each item shows its place in the form as it was given to the pupils):

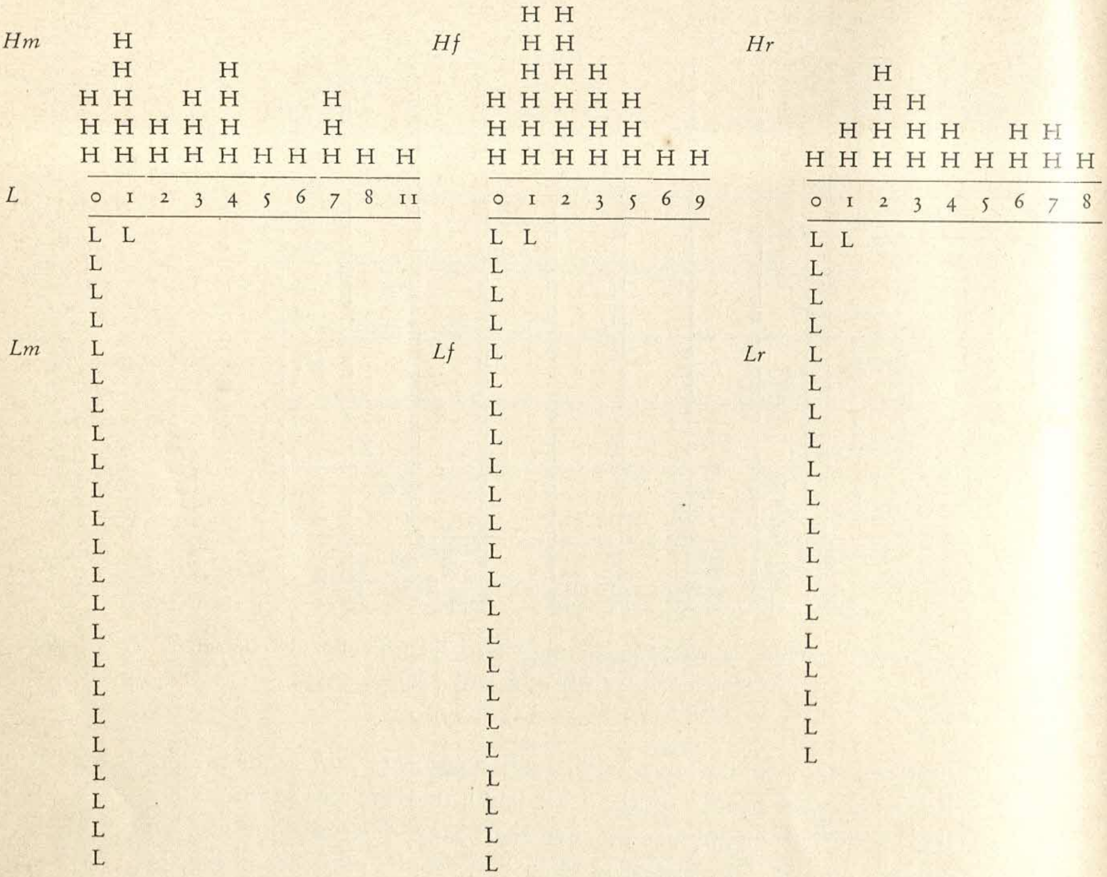


Fig. 9.10. Choices received: Leadership preferences.
(Beta Basic and Beta Restricted)

I. *Social "positivity" v. social "negativity":*

1. Is nice to talk to. You could chat with him (her) about everything. (31)
   Is difficult to talk to. (16)
2. Willingly lends things to those who need something, and gladly shares with others if he (she) has something to offer. (19)
   Is rather stingy: is hardly ever willing to lend anything to others or offer anything. (4)
3. Is very helpful. Helps at once when somebody needs help. (13)
   Is not helpful. Helps others only reluctantly. (28)
4. Is reliable and trustworthy. Never tells tales. (7)
   Is unreliable and untrustworthy. Often tells tales. You cannot confide in him (her). (22)

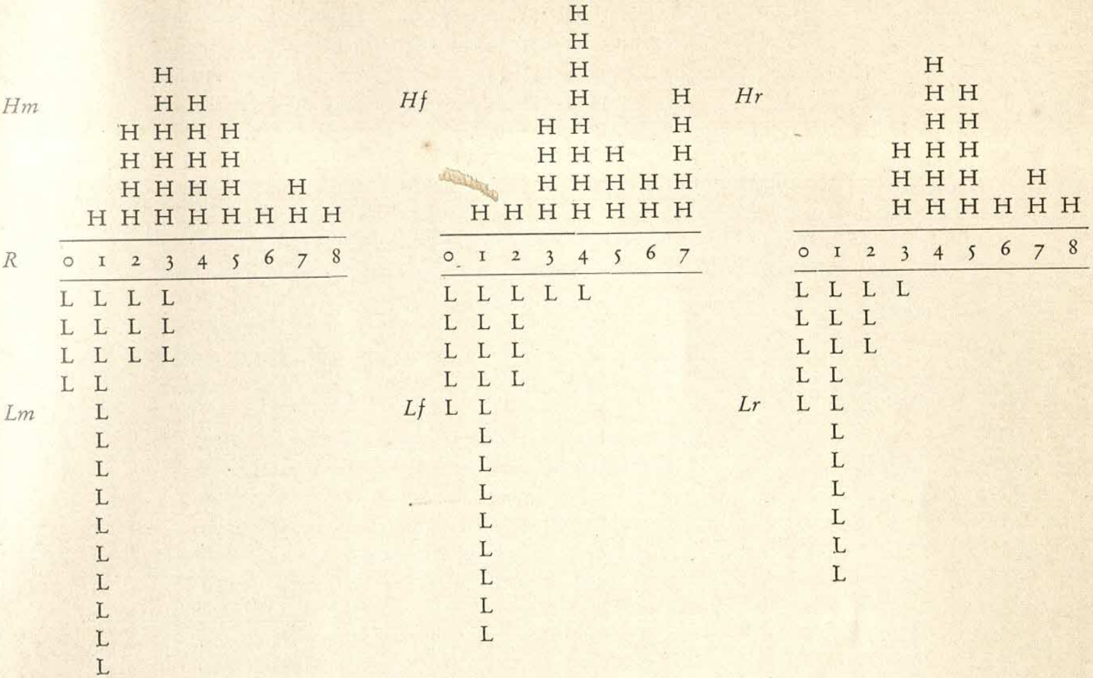


Fig. 9.11. Choices received: Recess companion preferences.
(Beta Basic and Beta Restricted)

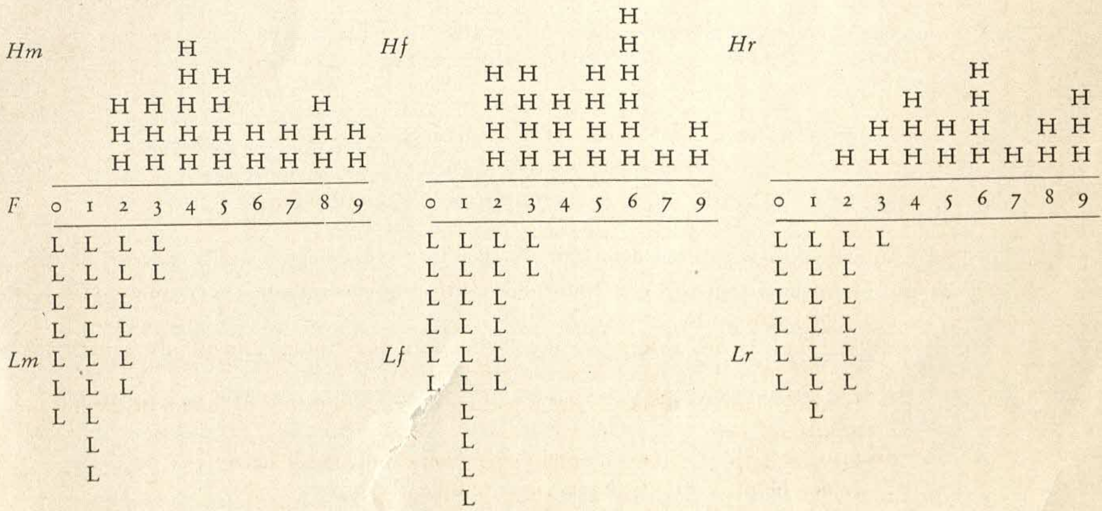


Fig. 9.12. Choices received: Friendship preferences.
(Beta Basic and Beta Restricted)

Table 9.5. Choices Received in Three Different Choice Situations
(Beta Basic and Beta Restricted)

| Choice aspect | Cat. | $M_H$ | $M_L$ | *H%l* | *H%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|---|
| "Leader" | M | 3.54 | 0.04 | 12 | 95 | 26+22 | ++ | <.001 |
| | F | 2.50 | 0.04 | 12 | 95 | 26+22 | ++ | <.001 |
| | R | 3.67 | 0.05 | 5 | 94 | 20+18 | ++ | <.001 |
| "Recess companion" | M | 3.96 | 1.21 | 19 | 86 | 26+22 | ++ | <.001 |
| | F | 4.54 | 1.17 | 8 | 92 | 24+24 | ++ | <.001 |
| | R | 4.78 | 1.00 | 0 | 95 | 19+19 | ++ | <.001 |
| "Friend" | M | 5.13 | 1.13 | 12 | 91 | 25+23 | ++ | <.001 |
| | F | 4.71 | 1.17 | 15 | 91 | 26+22 | ++ | <.001 |
| | R | 5.78 | 1.10 | 5 | 94 | 20+18 | ++ | <.001 |

Table 9.6. Choices Received in Three Different Choice Situations
(Beta Extra: U, V)

| Choice aspect | Class | $M_A$ | $M_B$ | $M_C$ | $M_D$ | *AB%l* | *AB%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|---|---|---|
| "Leader" | U | 1.86 | 1.29 | 0.71 | 0.14 | 25 | 69 | 12+16 | +++ | .06 |
| | V | 2.00 | 1.25 | 0.38 | 0.43 | 18 | 68 | 11+19 | +o+ | .02 |
| "Recess companion" | U | 9.14 | 6.57 | 2.57 | 1.43 | 8 | 87 | 13+15 | +++ | <.001 |
| | V | 4.43 | 4.13 | 4.25 | 3.00 | 53 | 46 | 17+13 | +o− | >.3 |
| "Friend" | U | 4.86 | 3.29 | 2.14 | 0.86 | 29 | 82 | 17+11 | +++ | .02 |
| | V | 5.14 | 3.13 | 2.00 | 1.86 | 23 | 71 | 13+17 | +++ | .03 |

Table 9.7. Reported Interaction Facts
(Beta Basic and Beta Restricted)

| Var. | Cat. | $M_H$ | $M_L$ | *H%l* | *H%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|---|
| Habitual | M | 3.38 | 1.00 | 5 | 82 | 20+28 | ++ | <.001 |
| | F | 3.33 | 1.38 | 26 | 81 | 27+21 | ++ | <.001 |
| | R | 4.00 | 1.00 | 5 | 94 | 20+18 | ++ | <.001 |
| Temporary | M | 2.92 | 0.88 | 22 | 76 | 23+25 | ++ | <.001 |
| | F | 2.50 | 1.33 | 39 | 60 | 23+25 | ++ | .3 |
| | R | 3.22 | 1.05 | 17 | 75 | 18+20 | ++ | .002 |

5. Is never quarrelsome. Does not quarrel or fight. (25)
   Is rather quarrelsome. Quarrels or fights rather often. (10)
6. Never goes to pieces or looks sullen. Is always cheerful and lively. (1)
   Easily goes to pieces or looks sullen. (34)

II. *Extrovert social activity v. introvert social passivity*:

1. Loves to talk himself when there are lots of people around. (17)
   Hates to talk himself when there are lots of people around. (2)
2. Gets acquainted easily with newcomers. Is not at all shy. (35)
   Has difficulties in making new friends. Is shy and timid. (20)
3. Prefers to play and work together with others. (23)
   Prefers to play and work alone. (8)
4. Often starts new games. Likes to organize and decide. (11)
   Seldom starts new games himself. Is hardly ever willing to organize and decide. (26)
5. Is more interested in sports than in reading. (29)
   Is more interested in reading than in sports. (14)
6. Could be a leader of a work group. (5)
   Could not be a leader of a work group. (32)

III. *Efficiency v. inefficiency in work*:

1. Is very clever at school and can nearly always answer the questions. (33)
   Is not at all clever at school and can seldom answer the questions. (18)
2. Is very orderly and careful. (21)
   Is rather slovenly and careless. (6)
3. Always takes his duties seriously and is never noisy in class. (9)
   Hardly ever takes his duties seriously. Often fidgets and titters in class (24)
4. Is very tenacious. Does not give in when something is difficult. (27)
   Is not tenacious. Gives in easily and often leaves off work before it is finished. (12)
5. Works quickly. (15)
   Works slowly. (30)
6. Is interested in school. Always attends in class. (3)
   Is not interested in school work. Often does not attend in class. (36)

Among these categories — between which, of course, no definite, sharp limits can be drawn — the first and last correspond to some of the most usual categories of motivation discussed above; and the items are in most cases to be found verbatim in the children's motivations. The second category has a somewhat different character and — more independently of the preference motivations — has been made up of statements about social activity or passivity.

In each main category there are six item pairs. One part of each pair refers to positive (or active) behavior, and the other to negative (or passive) behavior.

Table 9.8. The Peer-Description Device: Object-Directed Analysis (Beta Basic and Beta Restricted)

| Var. | Cat. | $M_H$ | $M_L$ | $H\%l$ | $H\%h$ | $Tl+Th$ | $DD$ | $P$ |
|---|---|---|---|---|---|---|---|---|
| $P_1$ | M | 6.7 | 2.5 | 21 | 79 | 34+34 | ++ | <.001 |
| | F | 9.8 | 2.6 | 19 | 84 | 36+32 | ++ | <.001 |
| | R | 9.0 | 2.1 | 10 | 88 | 31+33 | ++ | <.001 |
| $P_2$ | M | 8.5 | 2.9 | 24 | 81 | 37+31 | ++ | <.001 |
| | F | 6.0 | 2.5 | 27 | 71 | 33+35 | ++ | <.001 |
| | R | 7.8 | 2.8 | 19 | 81 | 32+32 | ++ | <.001 |
| $P_3$ | M | 10.1 | 1.4 | 17 | 85 | 35+33 | ++ | <.001 |
| | F | 9.3 | 2.9 | 27 | 77 | 37+31 | ++ | <.001 |
| | R | 11.1 | 2.1 | 15 | 90 | 34+30 | ++ | <.001 |
| $P_t$ | M | 25.3 | 6.8 | 21 | 79 | 34+34 | ++ | <.001 |
| | F | 25.1 | 8.0 | 12 | 88 | 34+34 | ++ | <.001 |
| | R | 27.8 | 7.0 | 13 | 88 | 32+32 | ++ | <.001 |
| $N_1$ | M | 2.0 | 7.5 | 76 | 19 | 37+31 | ++ | <.001 |
| | F | 1.7 | 5.5 | 78 | 25 | 32+36 | ++ | <.001 |
| | R | 1.4 | 7.3 | 88 | 13 | 32+32 | ++ | <.001 |
| $N_2$ | M | 2.5 | 4.3 | 58 | 43 | 33+35 | ++ | >.3 |
| | F | 3.8 | 6.5 | 64 | 34 | 36+32 | ++ | .03 |
| | R | 2.7 | 4.8 | 58 | 39 | 36+28 | ++ | .2 |
| $N_3$ | M | 1.2 | 9.3 | 85 | 17 | 33+35 | ++ | <.001 |
| | F | 0.9 | 7.2 | 83 | 15 | 35+33 | ++ | <.001 |
| | R | 0.8 | 9.3 | 83 | 10 | 35+29 | ++ | <.001 |
| $N_t$ | M | 5.7 | 21.1 | 91 | 9 | 34+34 | ++ | <.001 |
| | F | 6.3 | 19.2 | 82 | 20 | 33+35 | ++ | <.001 |
| | R | 4.9 | 21.4 | 88 | 10 | 33+31 | ++ | <.001 |

## 2. Object-Directed Analysis: The Peer-Description Device Used for Rating Purposes

The peer-description device may be used for rating purposes, and we then consider the "socioperceptual" selectivity as at least partly object-determined; or rather, we interpret intersubjective consistencies as signs of object-determination. Epistemologically such a definition of "objectivity" sometimes seems to be the best possible. — Rating by acquaintances has been used in psychological research for many different purposes and in various ways (cf., e. g., HUSÉN 1952), and the device used here is similar

Table 9.9. The Peer-Description Device: Object-Directed Analysis (Beta Extra: X)

| Var. | $M_A$ | $M_B$ | $M_C$ | $M_D$ | $AB\%l$ | $AB\%h$ | $Tl+Th$ | $DD$ | $P$ |
|---|---|---|---|---|---|---|---|---|---|
| $P_1$ | 25.8 | 8.7 | 7.6 | 4.1 | 32 | 75 | 19+16 | +++ | .03 |
| $P_2$ | 27.3 | 6.6 | 4.7 | 2.3 | 26 | 81 | 19+16 | +++ | .004 |
| $P_3$ | 31.2 | 4.6 | 5.6 | 0.6 | 35 | 67 | 17+18 | +o+ | .1 |
| $P_t$ | 84.3 | 19.8 | 17.8 | 7.0 | 28 | 76 | 18+17 | +++ | .01 |
| $N_1$ | 4.7 | 8.9 | 11.0 | 12.6 | 65 | 39 | 17+18 | +++ | .2 |
| $N_2$ | 7.4 | 6.9 | 13.1 | 14.6 | 65 | 39 | 17+18 | +o+ | .2 |
| $N_3$ | 1.8 | 4.0 | 13.0 | 27.8 | 81 | 26 | 16+19 | +++ | .004 |
| $N_t$ | 13.9 | 19.8 | 37.1 | 55.0 | 76 | 28 | 17+18 | +++ | .01 |

to the "guess-who tests" used in certain investigations of "character reputation" (cf., e. g., Hartshorne & May 1930, Young 1947, Havighurst & Taba 1949, Laughlin 1954). The present kind of peer-description device used as a rating technique with children seems to have certain advantages over several other rating methods because of its simplicity and its close relationship to children's own preference motivations.

The following instructions were given when the device was employed in a whole class: "On these pages there are several descriptions of boys and girls. Read through them one at a time and check whether any of them seem to fit some of the children in your class. Write after each description the names of all the children in your class it applies to. If it does not fit any of them, you do not, of course, write anything. If it fits you, write your own name." In the extreme categories the same instructions were given, with the exception that those pupils could only choose from among the eight children picked out from the total class (each child received a paper with the names of the eight children for his class, including himself).

From the data two main scores may be established:

$P_t$ = the total number of times a person has been mentioned by others in connection with positive or active behavior;

$N_t$ = the total number of times a person has been mentioned by others in connection with negative or passive behavior.

In a similar way one positive and one negative score for each of the three sub-categories within the form may be established ($P_1$, $P_2$, $P_3$; $N_1$, $N_2$, $N_3$).

Table 9.10. The Peer-Description Device: Subject-Directed Analysis (Beta Basic)

(a) The Degree of Sex Cleavage: Total Sample

| Var. | $M_M$ | $M_F$ | $M\%l$ | $M\%h$ | $Tl+Th$ | $DD$ | $P$ |
|---|---|---|---|---|---|---|---|
| *Mp* | 9.76 | 6.10 | 32 | 66 | 63+73 | ++ | <.001 |
| *Fp* | 5.55 | 11.06 | 74 | 22 | 73+63 | ++ | <.001 |

(b) The Degree of Sex Cleavage: *H* Sample *v.* *L* Sample

| Var. | Cat. | $M_M$ | $M_F$ | $M\%l$ | $M\%h$ | $Tl+Th$ | $DD$ | $P$ |
|---|---|---|---|---|---|---|---|---|
| *Mp* | H | 8.85 | 7.06 | 43 | 58 | 37+31 | ++ | >.3 |
| | L | 10.68 | 5.15 | 26 | 76 | 35+33 | ++ | <.001 |
| *Fp* | H | 6.79 | 9.41 | 65 | 32 | 37+31 | ++ | .02 |
| | L | 4.29 | 12.68 | 83 | 13 | 36+32 | ++ | <.001 |

The differences between *H* Sample and *L* Sample as to the degree of sex cleavage are significant (*Mp* : *P* .05; *Fp* : *P* .02)

*Key:* $M_M$ = *M*ean score of the *m*ale subjects
$M_F$ = *M*ean score of the *f*emale subjects
$M\%l$ = The percentage of *m*ale subjects who are *l*ow-scorers in *Mp* and *Fp*
$M\%h$ = The percentage of *m*ale subjects who are *h*igh-scorers in *Mp* and *Fp*
*Mp* = The number of *m*ale subjects *p*ositively mentioned
*Fp* = The number of *f*emale subjects *p*ositively mentioned

We expected, of course, that all *P*-scores would be high for the High-Status pupils and all *N*-scores high for the Low-Status pupils. The results in Tables 9.8 and 9.9 show that all the differences go in the expected direction, and that most of them are highly significant. The two modes of subjective assessment — the peer-preferences with reference to a group work situation at school and the peer-description in terms of social positivity, social activity and work efficiency — are thus intimately related for many pupils, and may, for some purposes and for some individuals, be considered only as different aspects of a complex total peer-evaluation. But what about the "reality" of the positivity, activity, and work efficiency of our High-Sample individuals? Such a question cannot be unequivocally answered by this device, but must be further investigated by individual test-situations and interaction situations where the participant "peer-perceivers" are replaced by the less situation-involved "experimenter-perceiver". But of course we may have certain expectations on the basis of our rating: to the extent that we find some degree of consistency between different sets of subjective evaluations, we are prepared to infer some kind of "objectivity". We may express this fact better thus: in such cases, we may, with some degree of probability, expect a certain correspondence between our sets of subjective statements and other sets of statements, e. g., the protocol statements of the experimenter. (We may here add that although in the Beta Extra Class the sociopreferential statements and the peer-description statements were made by the same pupils, this was not the case in Beta Basic and Beta Restricted to the same extent. In this latter case, the peer-description statements were made by eight pupils, whereas the workmate preferences were stated by all the pupils in the classes. The correspondence between the sets of statements in these cases is therefore more interesting.) Hence, we may expect a certain correspondence not only between sociopreferential status, as defined by peer choices, and interaction *quality*, as defined by an experimenter-perceiver (cf. the positivity-negativity variable and the efficiency-inefficiency variable), but also between sociopreferential status and interaction *quantity*, (cf. certain aspects of the social activity-passivity variable), although the latter correlation may perhaps be expected to be somewhat lower (cf. score $N_2$ in the tables).

### 3. Subject-Directed Analysis: The Peer-Description Device Used as a Test of the Describer

In this section we are not concerned with the rated but with the rater. Whereas we interpreted intersubjective consistencies as signs of object-determination, we now try to interpret intersubjective differences as signs of subject-determination.

The general empirical fact of subject-determined perceptual selectivity — which is one of the fundamental assumptions underlying all "projective" testing — has been verified in many different research situations and has also received some attention in the field of social psychology. In the present case we approach our peer-descriptions with questions such as the following: Can we find any *describer-determined "socioperceptual" selectivity*? For example, is there anything like a social rating determined by the sex role? Or can we rightly speak of a "socioperceptual" selectivity associated with different sociopreferential positions of the *describers*?

From the primary data several scores may be established. In Table 9.10 we have worked out two:

$Mp$ = the number of boys (*m*ales) *p*ositively mentioned;
$Fp$ = the number of girls (*f*emales) *p*ositively mentioned.

Certain interesting facts may be observed. There is a highly significant difference for both scores between the sexes. We know from chapter 5 above that there is often very little inter-sex choosing and we have also seen that this choice barrier is often accompanied by a kind of barrier against accurate "perception" of intersexual preferences (chap. 7). We now see that this "perceptual sex barrier" is a still more general phenomenon: there is a very clear tendency to overrate members of one's own sex — this fact is in accordance with certain earlier findings (cf., e. g., KINDER 1925, TUDDENHAM 1952). We may perhaps express it thus: we are more generous in what we expect from other people's positive behavioral possibilities with respect to our own sex (for recent discussions of the concepts of "behavioral possibilities" and "role expectancy", cf., e. g., FROM 1953, ROMMETVEIT 1953). The most interesting point, however, is perhaps revealed by an analysis of the High-Status and Low-Status children when divided into sex categories. There seems to be a highly significant difference between Low-Status boys and girls with respect to the number of boys positively mentioned as well as to the number of girls so mentioned. The "perceptual barrier" is very clear in these cases. But when we look for this sex difference among the High-Status children, we either find it to a lesser degree ($Fp$) or — from the point of view of statistical significance — not at all ($Mp$). Hence we have registered the following important fact: the Low-Status boys and girls in this population tend to favor their own sex with positive ratings more than the High-Status pupils do. Or stated in another way: there are facts which indicate that the High-Status children may be less sex-role-determined in their positive ratings; that their "socioperceptual" selectivity is not so restricted to their own sex.

## IV. TEACHER-REPORT LEVEL OF DESCRIPTION

### 1. Spontaneous Descriptions: Examples

In free and easy interviews with the teachers, we obtained a first idea of what the selected pupils were like from their point of view. Several of the teachers wrote down additional items of information on the back of the rating schedules (to be discussed later) after having filled them up.

Since it may be of interest to have some examples of such free-hand pupil descriptions in order to gain a more concrete idea of their general scope, we will present a few of them, selecting those describing the twelve Low-Status children in grade level 3 and the twelve Low-Status children in grade level 6. Information given within inverted commas is quoted directly from the written text of the teachers; information given without quotation marks represents items collected in casual discussion. (For the code-names the reader is referred to Tables 8.1 and 8.2, p. 286—287).

*Class 3mf*:

*Lam*: "Not mature for the grade. Not completely ungifted, but falls into reveries. Has difficulties in starting and works slowly."

*Lamn*: Is the center of interest at home, being coddled by a somewhat nervous mother. Wants to be the center of interest also in class, but, as a rule, he cannot be this for any except the less popular children and he behaves disturbingly in class. "Has to 'show off' and then lacks discrimination. Whimsical and rash. Looks for excitement." Has been the leader of a few shop pilfering adventures, in which *Lam* also took part as a follower. Indulges in fanciful vagaries, lying freely about his own adventures.[1] Plays truant sometimes. Overactive.

*Laf*: "Lisps. Lazy. Is the fourth of six brothers and sisters who are either talented and pushing or dreamers. *Laf* is of the latter type. Works slowly."

*Lafi*: "Nailbiter. Irresponsible. Given care, she is able to be punctual and remember some of her tasks. Agreeable in manners, but seems spineless."

*Class 3a*:

*Lame*: "Parents divorced. Adores his father whom he sees only seldom. After a visit to his father he is considerably more manageable in class for a while. Shows aversion to all girls, tries to get the boys to side with him against them. Admits errors (in private) and is then deeply remorseful."

*Lamen*: "Hyper-nervous, blunt, brutal towards smaller children (especially girls). Extremely slovenly and it is hardly possible to read his writing. Stiff as a ramrod in gymnastics, like an inflexible tin-soldier."

*Lafa*: "Was immature when beginning school. Bites her nails."

*Lafia*: "Especially difficult this term. The parents divorcing. *Lafia* is always 'ill', but has been found healthy at all examinations. Of the 60 days so far, she has been absent on 20."

*Class 3b*:

*Lamo*: Not very intelligent. Thinks slowly. Lacks interest in school work. Disturbing in class.

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[1] As examples of his way of lying, it may be mentioned that *Lamn*, during the single-individual test session, found time to tell the present writer one fanciful story about his grandfather and grandmother living in India, sending him leopard skins for making trousers, and another about his parents being refugees from Finland during the war (both stories with many details and both clearly contrary to the facts).

*Lamon*: "Is a dreamy boy, easily falling into reveries. He appears not to be very self-critical and shows want of discrimination in interacting with his classmates. He has some motorical defect which makes him clumsy in his behavior and gives him a handicap in several work situations in school."
*Lafu*: Not very intelligent. Sometimes acts the bully.
*Lafiu*: "Is a sunnily smiling girl, lacking 'personality' and activity. Not very intelligent."

*Class 6mf*:

*Lom*: "Has severe sweating of the feet and is abnormally fat. Is generally called 'Hash'. Bad home."
*Lomn*: Lacks interest in general. Often critical, reluctant, or impertinent. Uneven temper, impatient. "Bad home."
*Lof*: Has played truant. Lacks interest in school. Not very intelligent.
*Lofi*: Overactive. Cheating. Chatterbox who takes everything extremely easily. Lost her father last year.

*Class 6a*:

*Lome*: Overactive. Attention wavers. Easily loses his temper.
*Lomen*: Nervous. Gives in to others. Somewhat reticent.
*Lofa*: Was nasty for a long time to a girl who has now left school, and most of the classmates rejected her after that. Has been a pupil in the "French School", and gets on her high horse. She represents a menace to the good spirit of the class.
*Lofia*: Has sided with *Lofa* and therefore attracted rejection, too. Somewhat negativistic.

*Class 6b*:

*Lomo*: "Seems to have difficulties in giving anything of himself. Appears to 'have a complex'. Nervous."
*Lomon*: "Is enterprising and full of ideas when he is interested in something. Otherwise, completely unenterprising. Is considered to be childish by his classmates. The youngest child of his family, all of whom find him *so* sweet. The father is an architect. The boy is artistic and very dreamy." Often ill. Tics. He is the boy who is different from all the others, being sorry when his classmates do not admire Indian dance music as much as he does. Happy-go-lucky and forgetful; arrives at school perhaps half an hour late because of the fine weather and the beautiful flowers on the way.
*Lofu*: "Parents divorced. Lives in pronouncedly artistic surroundings, other relatives highly conservative. The only child, associates mostly with adults. Has sometimes had to get on quite alone, her mother being abroad for long periods. Played truant in lower classes." Hyperintelligent. Condescending attitude towards her classmates, whom she considers to be 'quite empty-headed'.
*Lofiu*: "Parents divorced. Low intelligence, brothers and sisters are backward and receiving extra tuition. Nice, but a little clumsy."

We have selected descriptions from Low-Status children, because the teacher reports about these children were often most detailed, in some cases perhaps due to facts analogous with the old saying "health is silent". In order to illustrate the descriptions of High-Status children, we may, however, give those from one class, viz. 3mf.

*Ham*: "Pleasant pupil. Does a lot on his own initiative in work and play. Interested in reading and drawing."
*Hamn*: "A calm and confident boy with an even temper. A good home."
*Haf*: "Interested in nature (flowers and animals). Eager to learn. Is given much knowledge at home. Model pupil."
*Hafi*: "Over-talented and eager as a thoroughbred horse. Nervous."

We find that the different Low-Status children, as seen by the teachers, are very different kinds of individuals: clumsy and unintelligent children (such as *Lofiu*) mixed up with nervous and disturbing children (such as *Lamn*), with hyperintelligent, but condescending ones (such as *Lofu*), and with children whose primary error is that they are too different from the others (such as *Lomon*). A few facts often referred to may be stressed. Lack of work efficiency due to inability is often pointed out: low intelligence (*Lafiu*, *Lofiu*), immaturity (*Lam*, *Lafa*), slow work (*Lam*, *Laf*), or slovenly work (*Lamen*). In some cases, lack of work efficiency due to inactivity is mentioned: laziness (*Laf*, *Lafiu*) and reveries (*Lam*, *Laf*, *Lamon*, *Lomon*). Work efficiency may also be impaired by irrelevant activity (*Lamn*). Interaction efficiency is hindered by bluntness (*Lamen*) as well as by a condescending or high and mighty attitude (*Lofa*, *Lofu*). Special defects are mentioned several times: lisping (*Laf*), motorical clumsiness (*Lamon*, *Lofiu*), fatness and sweating (*Lom*). General "nervousness" is sometimes referred to (*Lamn*, *Lamen*, *Lomen*, *Lomo*, but compare also *Hafi*), tics (*Lomon*) and nailbiting (*Lafi*, *Lafa*) also. "Bad homes" in general are reported in some cases (*Lom*, *Lomn*), and divorces in several (*Lame*, *Lafia*, *Lofu*, *Lofiu*).

In spite of the rich and valuable information to be found in these spontaneous descriptions, data of this kind lack a strict system. Single items are picked out by the describer, and we do not know whether a piece of information given about one individual does not also apply to another. Systematic comparisons between the Low-Status and High-Status individuals are therefore difficult or impossible on the basis of this material. For such purposes however, rating scales are of greater use.

Table 9.11. Teacher Ratings: Behavior Problems; Haggerty-Olson-Wickman: Schedule *A* (Beta Basic and Beta Restricted)

| Cat. | $M_H$ | $M_L$ | *H%l* | *H%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|
| M | 13.8 | 54.4 | 85 | 17 | 33+35 | ++ | <.001 |
| F | 8.9 | 41.1 | 80 | 26 | 30+38 | ++ | <.001 |
| R | 6.8 | 53.0 | 88 | 13 | 32+32 | ++ | <.001 |

Table 9.12. Teacher Ratings: Behavior Problems; Haggerty-Olson-Wickman: Schedule *A* (Beta Extra: X)

| $M_A$ | $M_B$ | $M_C$ | $M_D$ | *AB%l* | *AB%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|---|
| 12.0 | 15.8 | 17.8 | 38.7 | 61 | 41 | 18+17 | +++ | >.3 |

## 2. General Teacher Rating: Behavior Problems and Intellectual, Physical, Social, and Emotional Aspects of Behavior

As a basis for the general teacher rating, we employed two widely used American rating scales: the Haggerty-Olson-Wickman "Behavior Rating Schedules" (Haggerty 1925, Wickman 1928, Olson 1930, Haggerty, Olson, & Wickman 1930). These scales have certain advantages over many other rating scales: They are multi-dimensional, and they deal with variables which have received a concrete and clear description. One of them is moreover especially concerned with those types of behavior problems that the teacher is frequently concerned with, and which moreover may be thought to have importance for the sociopreferential status of the individual in a school class.

Schedule *A*, having the heading: "Behavior Problem Record", asks the teacher to indicate on a four-point scale the frequency with which fifteen types of behavior problems occur: cheating, lying, temper outbursts, speech difficulties, truancy, etc. Schedule *B* is a rating scale of a more general character. It contains thirty-five variables each in the form of a five-point scale. Four parts are distinguished: variables dealing with intellectual, physical, social, and emotional aspects of behavior. — From the ratings in Schedule *A*, a total score is obtained based on the weighting of each problem and the degree of frequency. A high score thus means the

Table 9.13. General Teacher Ratings; HAGGERTY-OLSON-WICKMAN: Schedule *B* (Beta Basic and Beta Restricted)

| Var. | Cat. | $M_H$ | $M_L$ | *H%l* | *H%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|---|
| Intellectual aspects of behavior | M | 12.7 | 21.0 | 82 | 18 | 34+34 | ++ | <.001 |
| | F | 12.4 | 19.7 | 76 | 24 | 34+34 | ++ | <.001 |
| | R | 12.0 | 20.5 | 78 | 22 | 32+32 | ++ | <.001 |
| Physical aspects of behavior | M | 11.7 | 16.9 | 81 | 13 | 37+31 | ++ | <.001 |
| | F | 12.9 | 16.1 | 71 | 27 | 35+33 | ++ | <.001 |
| | R | 12.2 | 17.2 | 78 | 22 | 32+32 | ++ | <.001 |
| Social aspects of behavior | M | 16.6 | 25.1 | 90 | 16 | 31+37 | ++ | <.001 |
| | F | 16.3 | 23.3 | 77 | 27 | 31+37 | ++ | <.001 |
| | R | 16.1 | 24.9 | 87 | 15 | 31+33 | ++ | <.001 |
| Emotional aspects of behavior | M | 17.3 | 28.0 | 84 | 22 | 31+37 | ++ | <.001 |
| | F | 17.1 | 26.1 | 76 | 17 | 38+30 | ++ | <.001 |
| | R | 16.8 | 27.8 | 79 | 19 | 33+31 | ++ | <.001 |
| Total | M | 58.4 | 90.9 | 91 | 9 | 34+34 | ++ | <.001 |
| | F | 58.7 | 85.2 | 81 | 22 | 32+36 | ++ | <.001 |
| | R | 57.1 | 90.5 | 84 | 16 | 32+32 | ++ | <.001 |

Table 9.14. General Teacher Ratings; HAGGERTY-OLSON-WICKMAN: Schedule *B* (Beta Extra: X)

| Var. | $M_A$ | $M_B$ | $M_C$ | $M_D$ | *AB%l* | *AB%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|---|---|
| Intellectual aspects of behavior | 12.9 | 17.7 | 18.9 | 22.5 | 65 | 39 | 17+18 | +++ | .2 |
| Physical aspects of behavior | 13.9 | 13.1 | 15.7 | 17.5 | 63 | 38 | 19+16 | + 0 + | .3 |
| Social aspects of behavior | 18.9 | 19.5 | 21.2 | 24.5 | 72 | 29 | 18+17 | +++ | .03 |
| Emotional aspects of behavior | 18.9 | 20.3 | 20.5 | 24.7 | 58 | 44 | 19+16 | +++ | >.3 |
| Total | 64.6 | 75.0 | 76.4 | 89.2 | 71 | 33 | 17+18 | +++ | .07 |

presence of many and/or serious problems. It is interesting that a *total score for "problem tendency"* may be obtained from the more general Schedule *B*. Each step of a single rating scale is given a weighting value, adjusted in terms of the relation between this item and Schedule *A*. An example: One scale consists of the following five steps: extremely sluggish; slow in action; moves with required speed; energetic, vivacious; overactive, hyperkinetic, meddling. In an investigation of children, it was found that the pupils who had been rated as extremely sluggish received the highest average score in Schedule *A*. Next highest average score in Schedule *A* belonged to those who had been rated as overactive, etc. Guided by these empirical observations, the constructors of the rating scale have thus adjusted the next to highest weighting score for "problem tendency" to the latter rating and the highest weighting score to the former rating. Hence, with this method, the ratings may also be of diagnostic value for variables to which they do not directly refer.

It is often stressed (cf., e. g., GREENE 1952, p. 461; GUILFORD 1954, p. 279) that *all* individuals who are to be judged ought first to be rated in one variable before the rater continues with the next. The rating scale forms are seldom made in this way. In order to force the teacher to make such an interpersonal comparison, we constructed, as a supplement to the original rating scale, special *answer blanks in matrix form*, where the variables were given as row headings and the individuals to be rated as column headings. With this device the interpersonal comparison was easy and obvious, which probably meant both less work to the rater and greater dependability in the resulting scores.

We expected that in the eyes of the teachers the Low-Status individuals would appear as children with behavior problems and with those intellectual, physical and emotional characteristics which are found among children with problem tendencies. This was, in fact, shown to be the case in the highest degree. Tables 9.11—9.14 demonstrate that all differences in Beta Basic, Beta Restricted and the total class *X* go in the expected direction, and, in addition, that all differences between High and Low-Status individuals are highly significant. This means a more systematic corroboration of the ideas obtained from the impressionistic free-hand descriptions of the teachers discussed above, and it means also that the picture given by peers and the picture given by teachers correspond in certain important aspects. Although both peer-level and teacher-level reports are, of course, subjective to an important degree and influenced by general attitude ("evaluation"), nevertheless these intersubjective correspondences cannot be overlooked.

## 3. Teacher Rating of Co-Working Variables

It seemed natural also to investigate the teachers' impression of the pupil behavior in specific group work situations as the main preference aspect referred directly to such situations. Moreover, it would be interesting to compare this teachers' impression with the results of our own observation of the classroom behavior. To this end a simple rating schedule was constructed, in which the teachers were asked to rate the pupils on a seven-point-scale with respect to the following behavior tendencies in free work situations (independent work with possibility of co-working):

(1) *With respect to the work*:
  - *A*. Spontaneous working interest (1 = very strong: the attitude of the pupil very positive; 7 = very weak: the attitude of the pupil scarcely positive).[2]
  - *B*. Working activity (1 = very high; 7 = very low).

(2) *With respect to the classmates*:
  - *C*. Co-working "tone" ( = very positive: always kindly helpful; 7 = scarcely positive: never kindly helpful).
  - *D*. Co-working ability (1 = very good; 7 = very poor).
  - *E*. Co-working desire (1 = very much likes to work together with others; 7 = strongly dislikes to work together with others).

(3) *With respect to himself*:
  - *F*. Positive *v*. negative attitude towards himself: Does he believe in his ability or are "cannot"-reactions usual? (1 = believes in his ability; 7 = does not believe in his ability, "cannot").
  - *G*. Activity *v*. passivity: Does he give advice and guidance to others (active, directing) or does he not (passive, following)? (1 = often directs others; 7 = never directs others).

(4) *H*. Does the pupil appear to be sought after as a working partner? (1 = very sought after; 7 = never sought after).

In this case also, the teachers were given specific answer blanks in matrix form in order to facilitate the interpersonal comparison. This rating was made only in the *AB* Part of Beta Basic, since only in these classes did the pupils have more regular experience of group work.

We expected, of course, that the High-Status individuals would receive lower scores than the Low-Status individuals. The results in Table 9.15

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[2] In the form the numbers 1—7 were equally spaced across the page; 1 and 7 were defined by the text given here, while the intervening numbers 2—6 were given without text.

Table 9.15. Teacher Ratings: Co-Working Variables
(Beta Basic and Beta Restricted)

| Var. | Cat. | $M_H$ | $M_L$ | *H%l* | *H%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|---|
| | M | 3.36 | 4.59 | 76 | 33 | 17+27 | ++ | .01 |
| *A* | F | 3.18 | 4.36 | 75 | 41 | 12+32 | ++ | .09 |
| | R | 3.39 | 4.45 | 63 | 32 | 19+19 | ++ | .1 |
| | M | 2.60 | 4.60 | 70 | 30 | 20+20 | ++ | .03 |
| *B* | F | 2.65 | 4.05 | 72 | 32 | 18+22 | ++ | .03 |
| | R | 2.29 | 4.42 | 68 | 24 | 19+17 | ++ | .02 |
| | M | 3.05 | 4.65 | 87 | 28 | 15+25 | ++ | .002 |
| *C* | F | 2.95 | 4.60 | 82 | 26 | 17+23 | ++ | .002 |
| | R | 2.88 | 4.68 | 64 | 21 | 22+14 | ++ | .03 |
| | M | 2.65 | 4.25 | 79 | 24 | 19+21 | ++ | .002 |
| *D* | F | 2.55 | 4.65 | 93 | 24 | 15+25 | ++ | <.001 |
| | R | 2.35 | 4.63 | 79 | 12 | 19+17 | ++ | <.001 |
| | M | 3.00 | 4.40 | 75 | 33 | 16+24 | ++ | .02 |
| *E* | F | 2.80 | 4.25 | 80 | 32 | 15+25 | ++ | .009 |
| | R | 2.65 | 4.37 | 80 | 24 | 15+21 | ++ | .002 |
| | M | 2.45 | 4.35 | 81 | 16 | 21+19 | ++ | <.001 |
| *F* | F | 3.20 | 4.30 | 71 | 35 | 17+23 | ++ | .06 |
| | R | 2.53 | 4.00 | 68 | 24 | 19+17 | ++ | .02 |
| | M | 2.86 | 4.41 | 78 | 31 | 18+26 | ++ | .006 |
| *G* | F | 3.41 | 4.27 | 68 | 36 | 19+25 | ++ | .07 |
| | R | 3.00 | 4.10 | 65 | 33 | 17+21 | ++ | .1 |
| | M | 2.30 | 5.25 | 100 | 17 | 16+24 | ++ | <.001 |
| *H* | F | 2.70 | 5.30 | 88 | 22 | 17+23 | ++ | <.001 |
| | R | 2.41 | 5.21 | 79 | 12 | 19+17 | ++ | <.001 |

fully corroborate this. All differences go in the expected direction and some are highly significant. The differences seem to be most clear with respect to the co-working tone and co-working ability as well as — of course — the answer to question *H*.

## 4. The Teachers' Marks

School proficiency was repeatedly mentioned in the choice motivations of the pupils. The teachers' marks are the most direct and inclusive measures of this. Do the High-Status children average higher on the scale of marks than the Low-Status children? Our basic hypothesis says that

Table 9.16. Teachers' Marks
(Beta Basic and Beta Restricted)

| Var. | Grade level | Cat. | $M_H$ | $M_L$ | *H%l* | *H%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|---|---|
| General achievement (age corrected) | 3—5 | M | 13.75 | 9.65 | 6 | 89 | 16+19 | ++ | <.001 |
| | | F | 13.44 | 10.08 | 22 | 78 | 18+18 | ++ | .003 |
| | 6—8 | M | 16.61 | 13.08 | 33 | 67 | 18+18 | ++ | .05 |
| | | F | 16.06 | 13.42 | 28 | 72 | 18+18 | ++ | .02 |
| | 3—8 | M | 15.18 | 11.41 | 21 | 78 | 34+37 | ++ | <.001 |
| | | F | 14.75 | 11.75 | 25 | 75 | 36+36 | ++ | <.001 |
| | | R | 15.14 | 11.55 | 26 | 75 | 31+31 | ++ | <.001 |
| Physical achievement | 3—8 | M | 1.65 | 1.33 | 19 | 64 | 21+50 | ++ | .002 |
| | | F | 1.58 | 1.35 | 29 | 59 | 21+51 | ++ | .04 |
| | | R | 1.63 | 1.34 | 26 | 61 | 19+44 | ++ | .02 |

Table 9.17. Teachers' Marks
(Beta Extra: X, U, V)

| Var. | Class | $M_A$ | $M_B$ | $M_C$ | $M_D$ | *AB%l* | *AB%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|---|---|---|
| General achievement | X | 13.83 | 10.67 | 10.22 | 9.56 | 38 | 63 | 16+19 | +++ | .3 |
| | U | 12.29 | 11.07 | 10.50 | 8.43 | 27 | 77 | 15+13 | +++ | .02 |
| | V | 12.50 | 12.00 | 11.14 | 10.57 | 40 | 58 | 10+19 | +++ | >.3 |
| Physical achievement | X | 1.61 | 1.44 | 1.39 | 1.19 | 11 | 65 | 9+26 | +++ | .02 |
| | U | 1.57 | 1.50 | 1.43 | 1.14 | 14 | 62 | 7+21 | +++ | .08 |
| | V | 1.57 | 1.50 | 1.50 | 1.36 | 38 | 56 | 8+18 | +++ | >.3 |

they ought to, and our general teacher ratings make it probable, too. As a measure of general achievement, the sum of marks in theoretical subjects was used. (Because of the often slightly changing scale of marks, age correction was applied in the chi-square analysis of the general achievement scores.) The results in Tables 9.16 and 9.17 do not conflict with our expectations: all differences go in the direction of the hypothesis and some are highly significant. It is relatively seldom that the different status levels in the Beta Extra Classes show a consistently changing series of means; this is the case here, however.

Physical achievement, as seen in the marks for gymnastics, does not have such an immediate and self-evident relevance to efficiency in the work group; but, on the basis of the popular idea of the significance of physical achievement for general prestige, and with the knowledge of the importance of the general prestige factor in workmate choosing (cf. the intercorrelation between choice aspects demonstrated above) and finally, with the knowledge of the relatively good correspondences between physical and intellectual development, our hypothesis is that the High-Status individuals have higher marks for physical achievement than the Low-Status individuals. This is also shown to be the case. The differences are almost unexpectedly clear.

## V. SELF-REPORT LEVEL OF DESCRIPTION

Self-report questionnaires have played a great role in psychological research, but they have also been sharply criticized. In self-description inventories there is commonly objectivity in the data analysis (the scoring can often be entrusted to a machine) combined with certain conspicuous difficulties concerning the comparability of the primary test-situations: different subjects have no common frame of reference from which they can make their judgments. Moreover, the frame of reference employed may sometimes vary systematically in such a way that essential tendencies are hidden. An example relevant to the present kind of subjects will be mentioned. We expect, according to our general "efficiency-adjustment" hypothesis, that Low-Status individuals are somewhat less well-adjusted than High-Status individuals. In other words, the former ought to indicate more often in an inventory that they have certain personality problems than ought the latter. At the same time, we also expect the High-Status children to be more intelligent (intelligence testing will be discussed below). Higher intelligence is often accompanied by greater problem awareness. Thus, it is fully reasonable that an individual with better developed problem awareness but with fewer problems may get a higher problem score than an individual with more problems but with less developed problem awareness.

The criticism against inventories is very useful; it should make us cautious in how we make our interpretations, but should not necessarily make us wholly avoid this method of assessment. As long as we take all the information given at its face value ("text interpretation") — as is often done when regarding the inventory as a source of objective information, "enquête" (cf. the critical surveys by Ellis 1946, Ellis & Conrad 1948) — our procedure may justifiably be rejected as undependable. But when trying a "context interpretation", we can diminish the difficulties to a certain extent. This may be done in two different ways, both to be exemplified subsequently. On the one hand, the investigator may try to *avoid the subjectivity* by employing the inventory, not as a source of direct information, but as an incentive to reactions. Then the constructor has empirically decided how to interpret an answer by comparing the frequency of a specific "answer" in different populations of a defined character; the answer is regarded as a verbal unit of behavior possible to correlate with other units of behavior. On the other hand, the investigator may be directly *interested in the very subjectivity*, the subjective "perception" and the subjective description being his primary research object. We then do not ask whether a specific individual *has* more problems than another, calculated in some way or other more objectively, but rather whether this individual "perceives" and describes himself as having more problems or as being more unsatisfied than another. When dealing with "adjustment" in psychology, this latter approach should not be overlooked, and for those specifically interested in the awareness of social problems — as we are here — self-reports are of immediate importance.

Three questionnaires of the self-report type were used: (a) the *N* Questionnaire, (b) the California Test of Personality, and (c) the Junior Personality Quiz.

### 1. The *N* Questionnaire

The first of the inventories mentioned, called here the *N* Questionnaire, consists of a shortened form of BROWN's psychoneurotic inventory for children between nine and fourteen years (F. BROWN 1934, 1935, 1936, 1938). BROWN's inventory is one of the many attempts in the classic style which is considered to have its origin in Woodworth's Personal Data Sheet. It consists, thus, of a relatively varied and methodologically fairly unsophisticated combination of questions of the type: "Do you feel that people do not understand you?", "Do you often have headaches?", etc. Although it does not seem advisable to employ such a test singly for diagnostic purposes, together with the other self-report devices it may perhaps be used here to shed some light on the problem of "self-perception" of our different pupil categories. Of BROWN's 80 questions only 58 were included in the present short form. Most of the omitted items are either such as were felt to be ambiguous, or such as probably would have made several pupils uneasy and therefore would have unnecessarily induced them to make untrue statements (the items omitted were as follows: 9, 24—26, 30, 31, 35, 37, 38, 43, 48, 51, 52, 57—61, 65, 69, 71, and 72).

Table 9.18. The *N* Questionnaire
(Beta Basic and Beta Restricted)

| Var. | Cat. | $M_H$ | $M_L$ | $H\%l$ | $H\%h$ | $Tl+Th$ | $DD$ | $P$ |
|---|---|---|---|---|---|---|---|---|
| $N_t$ | M | 8.73 | 17.79 | 69 | 29 | 35+31 | ++ | .003 |
| | F | 11.15 | 14.24 | 54 | 45 | 37+31 | ++ | >.3 |
| | R | 8.10 | 16.03 | 72 | 26 | 32+31 | ++ | <.001 |
| $N_{ph}$ | M | 2.36 | 5.21 | 61 | 37 | 36+30 | ++ | .09 |
| | F | 4.00 | 5.06 | 56 | 44 | 36+32 | ++ | >.3 |
| | R | 2.71 | 4.59 | 59 | 42 | 27+36 | ++ | .3 |

Table 9.19. The *N* Questionnaire
(Beta Extra: X)

| Var. | Test occasion | $M_A$ | $M_B$ | $M_C$ | $M_D$ | $AB\%l$ | $AB\%h$ | $Tl+Th$ | $DD$ | $P$ |
|---|---|---|---|---|---|---|---|---|---|---|
| $N_t$ | I | 10.8 | 12.9 | 17.3 | 20.5 | 60 | 47 | 15+17 | +++ | >.3 |
| | II | 7.7 | 10.0 | 13.1 | 15.3 | 65 | 40 | 17+15 | +++ | >.3 |
| $N_{ph}$ | I | 4.0 | 3.9 | 5.4 | 7.1 | 71 | 39 | 14+18 | +o+ | .1 |
| | II | 2.3 | 4.5 | 5.3 | 5.4 | 71 | 33 | 17+15 | +++ | .08 |

Two scores were worked out for each individual: the total number of atypical answers ($N_t$), and the number of atypical answers dealing with physical disturbances, such as headaches, fainting-fits, tiredness, pains in the stomach, etc. ($N_{ph}$). In accordance with our main "efficiency-adjustment" hypothesis, we expected that the Low-Status children would receive higher values in these variables, that is, that they would describe themselves as less "well-adjusted" in general and with a higher number of physical handicaps. The results are given in Tables 9.18 and 9.19. In the extreme categories, all differences go in the expected direction, and the differences in $N_t$ are highly significant in Beta Restricted. In class *X* the investigation was made twice with the same pupils (I and II). The differences here are less clear. It may be of interest to mention that the results from these two tests (with a whole year's interval between them) correlated .73 (product-moment corr., $N = 32$). As a comparison it may be mentioned that the retest correlation for the total Brown inventory was .68 at a 2.5 month interval (cf. a survey of results gained in investigations of inventory reliability given by Sjöstrand 1949, p. 57 et seq.).

Table 9.20. Sick-Leave
(Beta Basic and Beta Restricted)

| Cat. | $M_H$ | $M_L$ | $H\%l$ | $H\%h$ | $Tl+Th$ | $DD$ | $P$ |
|---|---|---|---|---|---|---|---|
| M | 4.5 | 10.5 | 62 | 34 | 39+29 | ++ | .05 |
| F | 6.4 | 7.9 | 53 | 47 | 34+34 | ++ | >.3 |
| R | 6.4 | 11.7 | 62 | 37 | 34+30 | ++ | .08 |

It may be interesting to note, in passing, that Low-Status pupils not only tend to describe themselves as having more physical disturbances than the High-Status pupils, but that they also, in fact, have a higher sick-leave frequency (Table 9.20).

## 2. The California Test of Personality

California Test of Personality (Thorpe, Clark, & Tiegs 1942, L. P. Thorpe 1955) has several conspicuous deficiencies: (a) its name is partly inadequate and too pretentious, partly unsuitable for the subjects; (b) its subdivision into "Self Adjustment" and "Social Adjustment" seems artificial; (c) several items are unreasonably naïve; (d) the initial manual gives no exact data on validity investigations. Criticism of these and other points has also been made in other connections (Cattell 1941, Shaffer 1949, Spencer 1949). — Nevertheless, certain reasons seemed to speak in favor of the inclusion of this questionnaire in our test battery. The fact that it focuses on social aspects of "adjustment" is of direct interest. Its frequent use in American investigations has had the effect that we now cannot consider it as totally non-validated (for comparisons with the Rorschach test, cf. Blair & Clark 1946). Most important in this connection seems to be the fact that it has already been used in several sociopreferential investigations (Bonney 1943, McClelland & Ratliff 1947, Forlano & Wrightstone 1951, Singer 1951); possibilities of comparisons should then exist. Last but not least, this test, better than most of our other methods, ought to be able to furnish an answer to the important question: Does the child who receives many negative choices in a sociopreferential investigation, also "perceive" himself to be "maladjusted" in social connections? Is he aware of his specific position? Starting from our general hypotheses we expect an affirmative answer to these questions.

The questionnaire is edited in different series for different ages. The

Table 9.21. California Test of Personality: Main Parts
(Beta Basic and Beta Restricted)

| Var. | Cat. | $M_H$ | $M_L$ | *H%l* | *H%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|---|
| Part I | M | 53.53 | 44.50 | 34 | 67 | 35+33 | ++ | .02 |
| | F | 52.50 | 46.97 | 34 | 67 | 35+33 | ++ | .02 |
| | R | 53.78 | 42.19 | 19 | 79 | 31+33 | ++ | <.001 |
| Part II | M | 47.29 | 39.97 | 32 | 68 | 34+34 | ++ | .007 |
| | F | 47.26 | 45.03 | 41 | 58 | 32+36 | ++ | .2 |
| | R | 47.34 | 41.34 | 30 | 71 | 33+31 | ++ | .003 |
| Total | M | 100.82 | 84.47 | 28 | 69 | 32+36 | ++ | .002 |
| | F | 99.76 | 92.00 | 34 | 67 | 35+33 | ++ | .02 |
| | R | 101.12 | 83.53 | 24 | 77 | 33+31 | ++ | <.001 |

Table 9.22. California Test of Personality: Main Parts
(Beta Extra: X)

| Var. | $M_A$ | $M_B$ | $M_C$ | $M_D$ | *AB%l* | *AB%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|---|---|
| Part I | 60.0 | 55.2 | 52.0 | 45.8 | 35 | 67 | 17+18 | +++ | .1 |
| Part II | 54.8 | 53.7 | 51.4 | 48.1 | 31 | 68 | 16+19 | +++ | .07 |
| Total | 114.8 | 108.9 | 103.4 | 93.9 | 31 | 68 | 16+19 | +++ | .07 |

one suited to our purposes is the "Elementary Series". In its American form this consists of 144 questions, divided into 12 sections. In the present investigations, the final section ("Community Relations") was excluded because it was less relevant and because it contained a few rather unsuccessful items (in the Rorschach investigation mentioned above, this section also showed the lowest correlation). However, we did not wish to omit or alter single items within the test, since the comparability would then have been lost, not only for the scores for the different sections, but also for the remaining items which would then be in quite a new "context" (cf. the discussion of *MMPI* and its "superfluous" items, *Technical Recommendations* 1954, p. 209).

Thus, the version employed in the present investigations had 132 items, divided into eleven sections, named by the test constructors: (1A) Self-reliance, (1B) Sense of Personal Worth, (1C) Sense of Personal Freedom, (1D) Feeling of Belonging, (1E) Freedom from Withdrawing Tendencies,

Table 9.23. California Test of Personality: Sub-Parts
(Beta Basic and Beta Restricted)

| Var. | Cat. | $M_H$ | $M_L$ | H%l | H%h | Tl+Th | DD | P |
|---|---|---|---|---|---|---|---|---|
| | M | 7.38 | 6.58 | 43 | 55 | 28+40 | ++ | >.3 |
| *1 A* | F | 6.44 | 7.15 | 54 | 48 | 28+40 | −− | >.3 |
| | R | 6.75 | 6.66 | 50 | 50 | 28+36 | +0 | >.3 |
| | M | 7.62 | 6.29 | 40 | 64 | 40+28 | ++ | .09 |
| *1 B* | F | 7.94 | 6.35 | 35 | 71 | 40+28 | ++ | .007 |
| | R | 7.88 | 5.59 | 19 | 71 | 26+38 | ++ | <.001 |
| | M | 9.21 | 7.65 | 36 | 62 | 31+37 | ++ | .04 |
| *1 C* | F | 9.15 | 8.26 | 37 | 61 | 30+38 | ++ | .09 |
| | R | 9.25 | 7.63 | 36 | 65 | 33+31 | ++ | .05 |
| | M | 9.65 | 8.09 | 33 | 72 | 39+29 | ++ | .003 |
| *1 D* | F | 10.00 | 8.91 | 30 | 66 | 30+38 | ++ | .007 |
| | R | 9.97 | 7.88 | 27 | 81 | 37+27 | ++ | <.001 |
| | M | 10.09 | 7.26 | 27 | 71 | 33+35 | ++ | <.001 |
| *1 E* | F | 9.68 | 8.18 | 36 | 62 | 31+37 | ++ | .05 |
| | R | 10.25 | 6.78 | 23 | 74 | 30+34 | ++ | <.001 |
| | M | 9.59 | 8.62 | 41 | 58 | 32+36 | ++ | .2 |
| *1 F* | F | 9.29 | 8.12 | 41 | 62 | 39+29 | ++ | .1 |
| | R | 9.69 | 7.66 | 27 | 71 | 30+34 | ++ | .002 |
| | M | 10.35 | 9.76 | 46 | 54 | 33+35 | ++ | >.3 |
| *2 A* | F | 10.53 | 10.71 | 48 | 51 | 25+43 | −+ | >.3 |
| | R | 10.19 | 10.34 | 46 | 53 | 26+38 | −+ | >.3 |
| | M | 8.50 | 7.76 | 46 | 56 | 41+27 | ++ | >.3 |
| *2 B* | F | 8.00 | 7.85 | 52 | 49 | 33+35 | +− | >.3 |
| | R | 8.03 | 7.94 | 51 | 48 | 35+29 | +− | >.3 |
| | M | 9.97 | 8.47 | 36 | 66 | 36+32 | ++ | .03 |
| *2 C* | F | 10.24 | 9.71 | 48 | 51 | 31+37 | ++ | >.3 |
| | R | 10.22 | 8.69 | 29 | 70 | 31+33 | ++ | .003 |
| | M | 9.94 | 7.62 | 31 | 72 | 36+32 | ++ | .002 |
| *2 D* | F | 10.00 | 9.68 | 44 | 59 | 39+29 | ++ | >.3 |
| | R | 10.22 | 8.19 | 31 | 72 | 35+29 | ++ | .003 |
| | M | 8.53 | 6.35 | 33 | 69 | 36+32 | ++ | .008 |
| *2 E* | F | 8.50 | 7.09 | 43 | 61 | 40+28 | ++ | .2 |
| | R | 8.69 | 6.19 | 33 | 71 | 36+28 | ++ | .006 |

(1F) Freedom from Nervous Symptoms; (2A) Social Standards, (2B) Social Skills, (2C) Freedom from Anti-social Tendencies, (2D) Family Relations, (2E) School Relations. A high score means "good adjustment". Thus, our specific hypothesis is that the High-Status individuals ought to receive higher values than the Low-Status individuals with respect to total score, with respect to the scores of both the main parts of the test ("Self Adjustment": 1A—1F, and "Social Adjustment": 2A—2E) and with respect to scores from the single sub-sections. The results are given in Tables 9.21—9.23. With respect to total scores, we obtain very clear differences: the High-Status children are thus not only different from the Low-Status children with respect to *"social adjustment" as externally and specifically defined* with the aid of the sociometric choice situation but also with respect to *"adjustment" as subjectively experienced.* The individual who has received many negative choices not only *is* more rejected by his surroundings, he also reports himself to *feel* more rejected, more unhappy in his social relations. In sociopreferential literature there has been a tendency to come too easily to a conclusion of "subjective maladjustment" directly from the fact of low sociometric choice status. This has rightly been criticized, and there has been a demand for investigations as to whether this really is true. In this sample of subjects, at least, we find clear tendencies in this direction. Significant differences are found not only for total scores, but also for certain sub-sections, for example, 1D (feeling of belonging with respect to family and classmates), and 1E (freedom from withdrawing tendencies). In the normal class, the differences go in the same direction, although — as is natural — they are less clear.

If we investigate which are the most clearly differentiating items, we find that several of them refer directly to the awareness of rejection: "Do you think that nobody likes you?", "Do your classmates often quarrel with you?", "Do your classmates choose you as often as they should when they play games?".

## 3. The Junior Personality Quiz

In 1950 CATTELL and associates published a personality factor questionnaire for adults ("The Sixteen Personality Factor Questionnaire"), designed to cover the "source traits" isolated by his factor-analytic research (cf. CATTELL 1947, 1950, p. 56 et seq.). The "Junior Personality Quiz" (CATTELL, BELOFF, FLINT, & GRUEN 1953) is a similar later questionnaire designed for 10—16 year old children. Since these questionnaires are among the most ambitious attempts that have been made so far to change enquête answers, the direct validity of which (as factual information) is highly questionable, into multi-dimensional objective tests (by means of correlation between answer behavior and other types of behavior), we have found it of interest to include the *J.P.Q.* in our test battery for broadly explorative purposes, even if it is too recent a newcomer to have been adequately examined in all respects as yet.

The questionnaire consists of 144 questions divided into 12 "personality factors". The items referring to these have been mixed within the questionnaire in approximately cyclical order. Several factors are of such a character that we have no reason to expect any *strong* correlation with the sociopreferential status variable. Nevertheless, on reading through CATTELL's description of the factors in the handbook, we found it possible, starting from our basic "efficiency-adjustment" hypothesis, to state a specific reasonable expectation *a priori* with respect to the distribution of our extreme individuals for each of the twelve factors. CATTELL's descriptive terms for the different factors are given below, together with predictions (the letter given after the factor number indicates the approximately corresponding adult factor):

*Factor 1* (*I*): Emotional Sensitivity *v.* Toughness. (In this case it is explicitly stated, that "groups of individuals high in *I* factor are less effective in many group performances than the more practical and immediately active groups composed of low *I* individuals"; handbook, p. 9; cf. CATTELL & STICE 1953; thus, our hypothesis: *H* lower than *L.*)

*Factor 2* ($Q_4$): Nervous Tension *v.* Autonomic Relaxation. (The high-scorer is tense, irritable, and anxious. Hypothesis: *H* lower than *L.*)

*Factor 3* (O, *C*-): Neurotic, Fearful Emotionality *v.* Stability or Ego Strength. (The high-scorer is emotionally unstable, prone to anxiety, and lacking in self-confidence. Hypothesis: *H* lower than *L.*)

*Factor 4* ($Q_3$): Will Control *v.* Relaxed Casualness. (The high-scorer is self-controlled and persistent. High scores are usual in "children who make good leaders, and who make good progress in school", handbook, p. 9. Hypothesis: *H* higher than *L.*)

*Factor 5* (*E*, *G*-): Impatient Dominance. (The high-scorer is impatient and quick to anger. Hypothesis: *H* lower than *L.*)

*Factor 6* (*A*): Cyclothymia *v.* Schizothymia. (The high-scorer is cyclothyme, sociable, and warm-hearted. Hypothesis: *H* higher than *L.*)

*Factor 7* (*H*): Adventurous Cyclothymia *v.* Withdrawn Schizothymia. (The high-scorer is characterized by bold and boisterous confidence.

Table 9.24. Junior Personality Quiz
(Beta Basic and Beta Restricted)

| Var. | Cat. | $M_H$ | $M_L$ | $H\%l$ | $H\%h$ | $Tl+Th$ | $DD$ | $P$ |
|---|---|---|---|---|---|---|---|---|
| *JPQ 1* | M | 4.62 | 4.29 | 46 | 55 | 37+31 | −− | >.3 |
| | F | 6.09 | 6.59 | 56 | 44 | 32+36 | ++ | >.3 |
| | R | 5.41 | 5.28 | 50 | 50 | 32+32 | −0 | >.3 |
| *JPQ 2* | M | 3.47 | 4.71 | 61 | 40 | 33+35 | ++ | .1 |
| | F | 4.21 | 4.82 | 57 | 42 | 37+31 | ++ | >.3 |
| | R | 3.75 | 5.16 | 68 | 36 | 28+36 | ++ | .02 |
| *JPQ 3* | M | 3.59 | 4.65 | 62 | 34 | 39+29 | ++ | .05 |
| | F | 2.62 | 3.62 | 57 | 45 | 30+38 | ++ | >.3 |
| | R | 2.72 | 4.50 | 68 | 36 | 28+36 | ++ | .02 |
| *JPQ 4* | M | 6.74 | 6.03 | 43 | 58 | 37+31 | ++ | >.3 |
| | F | 6.74 | 6.97 | 52 | 49 | 29+39 | −− | >.3 |
| | R | 7.00 | 5.78 | 36 | 65 | 33+31 | ++ | .02 |
| *JPQ 5* | M | 4.29 | 4.35 | 57 | 42 | 37+31 | ++ | >.3 |
| | F | 3.44 | 3.44 | 50 | 50 | 36+32 | 0 0 | >.3 |
| | R | 3.41 | 4.31 | 65 | 33 | 34+30 | ++ | .02 |
| *JPQ 6* | M | 7.47 | 6.47 | 43 | 62 | 42+26 | ++ | .2 |
| | F | 7.00 | 6.50 | 47 | 53 | 30+38 | ++ | >.3 |
| | R | 7.41 | 6.34 | 43 | 59 | 35+29 | ++ | >.3 |
| *JPQ 7* | M | 7.18 | 6.74 | 44 | 56 | 36+32 | ++ | >.3 |
| | F | 7.21 | 6.79 | 48 | 54 | 40+28 | ++ | >.3 |
| | R | 7.38 | 6.59 | 41 | 57 | 29+35 | ++ | >.3 |
| *JPQ 8* | M | 7.47 | 6.03 | 33 | 66 | 33+35 | ++ | .02 |
| | F | 8.97 | 8.44 | 41 | 56 | 29+39 | ++ | >.3 |
| | R | 9.13 | 6.72 | 26 | 79 | 35+29 | ++ | <.001 |
| *JPQ 9* | M | 4.32 | 5.50 | 68 | 35 | 31+37 | ++ | .02 |
| | F | 3.11 | 4.00 | 59 | 41 | 34+34 | ++ | .2 |
| | R | 3.09 | 5.00 | 73 | 26 | 33+31 | ++ | <.001 |
| *JPQ 10* | M | 6.56 | 6.06 | 47 | 53 | 36+32 | ++ | >.3 |
| | F | 6.82 | 6.38 | 49 | 52 | 35+33 | ++ | >.3 |
| | R | 6.41 | 6.13 | 51 | 48 | 37+27 | +− | >.3 |
| *JPQ 11* | M | 5.18 | 4.82 | 46 | 56 | 41+27 | ++ | >.3 |
| | F | 5.79 | 5.35 | 41 | 61 | 37+31 | ++ | .1 |
| | R | 4.88 | 5.09 | 48 | 51 | 29+35 | −+ | >.3 |
| *JPQ 12* | M | 7.26 | 5.44 | 35 | 68 | 37+31 | ++ | .02 |
| | F | 6.68 | 5.74 | 36 | 66 | 36+32 | ++ | .03 |
| | R | 7.16 | 5.53 | 36 | 68 | 36+28 | ++ | .02 |

Table 9.25. Junior Personality Quiz
(Beta Extra: X)

| Var. | $M_A$ | $M_B$ | $M_C$ | $M_D$ | *AB%l* | *AB%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|---|---|
| *JPQ 1* | 6.0 | 6.5 | 6.9 | 7.5 | 56 | 47 | 16+17 | + + + | >.3 |
| *JPQ 2* | 3.1 | 4.6 | 3.3 | 5.5 | 63 | 41 | 16+17 | + o + | >.3 |
| *JPQ 3* | 3.1 | 3.3 | 3.6 | 2.6 | 54 | 50 | 13+20 | − o + | >.3 |
| *JPQ 4* | 8.0 | 8.4 | 8.1 | 9.6 | 61 | 40 | 18+15 | − o − | >.3 |
| *JPQ 5* | 3.3 | 3.1 | 4.0 | 3.8 | 61 | 40 | 18+15 | + o + | >.3 |
| *JPQ 6* | 7.5 | 8.0 | 6.5 | 7.6 | 53 | 50 | 15+18 | − o − | >.3 |
| *JPQ 7* | 9.1 | 7.9 | 7.5 | 7.4 | 29 | 75 | 17+16 | + + + | .02 |
| *JPQ 8* | 10.1 | 8.7 | 8.8 | 9.6 | 44 | 59 | 16+17 | + o + | >.3 |
| *JPQ 9* | 2.1 | 2.6 | 3.6 | 4.1 | 75 | 15 | 20+13 | + + + | .003 |
| *JPQ 10* | 8.1 | 8.0 | 7.3 | 7.6 | 47 | 56 | 15+18 | + o + | >.3 |
| *JPQ 11* | 6.1 | 5.5 | 5.6 | 6.0 | 46 | 55 | 13+20 | + o + | >.3 |
| *JPQ 12* | 6.9 | 5.5 | 5.9 | 5.3 | 36 | 59 | 11+22 | + o + | >.3 |

Children with high scores "tend to be chosen as leaders"; handbook, p. 10. Hypothesis: *H* higher than *L*.)

*Factor 8* (*K*): Socialized Morale *v.* Dislike of Education. ("Children high on this factor are fond of school and all that goes with it, quick to accept cultural standards, and attentive and friendly to their associates"; handbook, p. 10. Hypothesis: *H* higher than *L*.)

*Factor 9* (*E*): Independent Dominance. (The high-scorer is dominant, talkative, shows lack of restraint and does not appreciate obeying rules. Hypothesis: *H* lower than *L*.)

*Factor 10* (*J*-): Energetic Conformity *v.* Quiet Eccentricity. (The high-scorer is a good mixer, but lacks eccentricity. Hypothesis: *H* higher than *L*.)

*Factor 11* (*F*): Surgency *v.* Desurgency. (The high-scorer likes gay parties and variety. Hypothesis: *H* higher than *L*.)

*Factor 12* (*B*): Intelligence. (The high-scorer is most intelligent. Hypothesis: *H* higher than *L*.)

The results are given in Tables 9.24 and 9.25. Of the 46 differences obtained in Beta Basic, only four go in an unexpected direction, but the differences are significant for both boys and girls only with respect to one of the twelve factors. This is factor 12, intelligence, the importance of which we will investigate further below. In class *X*, the differences are as usual not very conspicuous; of the 27 differences obtained, however, 22 go in the expected direction. — Many may feel that CATTELL's "factors" leave too much room for conceptual overlapping; a psychologist of the logical school would, without doubt, have reduced the varied field more than the psychologist of the statistical school has done here. In fact, CATTELL later made analyses with a stricter application of the simple structure principle and obtained a lower number of factors. Nevertheless, he wants to keep the original analysis, whereas EYSENCK (1953, p. 65) prefers the later, in which, among other things, the following compressions were made: (a) $G + C$ (emotional stability), (b) $B + K$ (general intelligence), and (c) $A + H + L$ (extraversion). — From the point of view of our general efficiency hypothesis, the expected differences could be summed up in the following way: in comparison with the *L* Sample, the *H* Sample individuals are expected to show better ability at focused work activity and work proficiency (which here means high scores in factors 4, 8, and 12), better ability at focused and smooth interaction (that is, high scores in factors 6, 7, 10, and 11), and, finally, a lower tendency to diffuse activity (nervous sensitivity, irritability, instability, etc.: that is, low scores in factors 1, 2, 3, 5, and 9). — An examination of the most widely differentiating items confirms our general conception. The High-Status individuals show themselves to be most efficient in the solving of problems. They display greater interest in school (item 35) and better adjustment to the demands of adults (item 117). They preponderate in outward-directed interests and group activity (item 114), whilst they show signs of emotional instability and irritability more seldom (items 3, 5, 25, 26, 57). Certain items directly mirror the differences in socio-preferential status: the much chosen also feels himself liked (item 10), whereas the seldom chosen feels himself to have few friends (item 121) and to be unfairly treated (item 85).

## VI. EXPERIMENTER-REPORT LEVEL OF DESCRIPTION: VARIABLES FROM VARIOUS GENERAL TEST-SITUATIONS

From the peers, the teachers, and the subjects we have obtained a picture of the differences between our High-Status and Low-Status individuals. We have achieved several results which seem to verify the general "efficiency-adjustment" hypothesis: that is, in comparison with the *L* Sample, the *H* Sample children seem to show more freedom from disturbances, with respect to both work efficiency and interaction efficiency. Although the correspondences between these different levels of report are conspicuous and, therefore, to a certain extent convert the subjectivity into intersubjectivity, it should still be of importance to see whether the differences referred to by peers, teachers, and subjects could be observed in more controllable and defined experimental situations.

## 1. Variables Related to Working Efficiency

### A. *Variables from intelligence tests*

Our general hypotheses about differences between the two pupil categories suggest that an investigation of variables from intelligence tests could be rewarding: the efficiency of the group work is, of course, related to the general ability. On the other hand, the preferences of the subjects do not start from this simple point of view only: the similarities obtained from results in our different choice aspects (choice of leaders, friends and playground companions) suggest very general choice principles; what role can intelligence variables play in this general evaluation?

For these testings one Swedish verbal test of omnibus type (SIEGVALD, Form *A*) and one American non-verbal test of perceptual type (CATTELL, Culture Free Scale 2 *A*) were selected. These two tests seemed fairly different and could therefore complement each other. The SIEGVALD test consists of 35 problems to be solved during 45 minutes and does not require any oral instructions. The CATTELL test is divided into four sub-tests (Series, Classifications, Matrices, and Conditions) which are all preceded by oral instructions; the sub-tests consist of 12 + 14 + 12 + 8 items and the effective testing times are 3 + 4 + 3 + 4 minutes (for further information related to the tests, cf. SIEGVALD 1944; CATTELL 1940, CATTELL, FEINGOLD, & SARASON 1941).

The two tests were given in group test situations; this was the case both in the extreme categories and in classes *U* and *V*. The SIEGVALD test was distributed in one session, and the CATTELL test in a later one. In the *MF* Part of Beta Basic, we were able to do the testing in the morning; in the *AB* Part the tests had to be distributed in the afternoon because of the timetable and localities. The differences which might possibly result from this ought to be unimportant in the present investigations, as the conditions were always the same for the two extreme categories to be compared.

Our hypothetical expectations are very simple in the present case: the High-Status individuals ought to show reasonably greater ability at solving the problems than the Low-Status individuals. The results are

Table 9.26. Intelligence Tests
(Beta Basic and Beta Restricted)

| Var. | Grade level | Cat. | $M_H$ | $M_L$ | $H\%l$ | $H\%h$ | $Tl+Th$ | $DD$ | $P$ |
|---|---|---|---|---|---|---|---|---|---|
| Verbal (SIEGVALD) | 3—8 | M | 19.4 | 13.4 | 32 | 69 | 34+32 | ++ | .007 |
| | | F | 17.8 | 14.6 | 35 | 66 | 34+32 | ++ | .03 |
| | | R | 19.6 | 13.0 | 27 | 70 | 30+30 | ++ | .002 |
| | 3—5 | M | 16.9 | 8.9 | 26 | 76 | 19+17 | ++ | .008 |
| | | F | 14.6 | 9.9 | 32 | 71 | 19+17 | ++ | .05 |
| | | R | 17.1 | 9.3 | 21 | 76 | 19+17 | ++ | .003 |
| | 6—8 | M | 22.4 | 18.7 | 40 | 60 | 15+15 | ++ | >.3 |
| | | F | 21.6 | 20.3 | 40 | 60 | 15+15 | ++ | >.3 |
| | | R | 23.1 | 18.9 | 36 | 62 | 11+13 | ++ | >.3 |
| Non-verbal (CATTELL) | 3—8 | M | 30.5 | 25.1 | 30 | 70 | 33+33 | ++ | .003 |
| | | F | 31.2 | 25.6 | 28 | 71 | 32+34 | ++ | .002 |
| | | R | 31.6 | 25.0 | 29 | 71 | 31+28 | ++ | .003 |
| | 3—5 | M | 29.4 | 20.6 | 17 | 83 | 18+18 | ++ | <.001 |
| | | F | 30.3 | 21.1 | 17 | 83 | 18+18 | ++ | <.001 |
| | | R | 31.5 | 21.2 | 11 | 88 | 18+17 | ++ | <.001 |
| | 6—8 | M | 31.9 | 30.5 | 47 | 53 | 15+15 | ++ | >.3 |
| | | F | 32.4 | 31.1 | 43 | 56 | 14+16 | ++ | >.3 |
| | | R | 31.8 | 30.6 | 54 | 45 | 13+11 | +− | >.3 |
| Wrong answers in short-time testing | 3—8 | M | 14.7 | 20.0 | 71 | 31 | 31+35 | ++ | .003 |
| | | F | 12.4 | 17.7 | 79 | 19 | 34+32 | ++ | <.001 |
| | | R | 13.3 | 19.6 | 69 | 30 | 29+30 | ++ | .007 |
| | 3—5 | M | 15.3 | 24.1 | 83 | 17 | 18+18 | ++ | <.001 |
| | | F | 13.5 | 22.1 | 89 | 11 | 18+18 | ++ | <.001 |
| | | R | 13.5 | 22.9 | 82 | 17 | 17+18 | ++ | <.001 |
| | 6—8 | M | 13.9 | 15.0 | 54 | 47 | 13+17 | ++ | >.3 |
| | | F | 11.1 | 12.4 | 69 | 29 | 16+14 | ++ | .07 |
| | | R | 13.0 | 14.7 | 50 | 50 | 12+12 | +0 | >.3 |

given in Tables 9.26—9.27. This is a case where grade level correction is important in order that existing differences should not be concealed in the total comparison. Such a correction has also been applied. We find (a) that, with respect to both the verbal and the non-verbal test, clearly significant differences exist between the High-Status and Low-Status individuals, (b) that differences according to the hypotheses are also found

Table 9.27. Intelligence Tests
(Beta Extra: U, V)

| Var. | Class | $M_A$ | $M_B$ | $M_C$ | $M_D$ | *AB%l* | *AB%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|---|---|---|
| Verbal | U | 14.6 | 13.7 | 10.7 | 12.7 | 45 | 56 | 11+16 | + 0 + | >.3 |
| (SIEGVALD) | V | 14.1 | 17.0 | 12.6 | 12.6 | 31 | 69 | 16+13 | + 0 + | .1 |
| Non-verbal | U | 28.7 | 28.0 | 24.5 | 26.2 | 33 | 80 | 15+10 | + 0 + | .06 |
| (CATTELL) | V | 25.9 | 25.0 | 24.6 | 25.0 | 46 | 53 | 13+15 | + 0 + | >.3 |
| Wrong answers in short-time | U | 16.9 | 18.0 | 19.0 | 18.1 | 62 | 39 | 13+13 | + 0 + | >.3 |
| testing | V | 19.6 | 20.7 | 20.5 | 20.0 | 46 | 53 | 13+15 | + 0 − | >.3 |

in the total classes, although they are less clear there, and (c) that the differences are much clearer on the lower grade levels than on the higher; in fact, the differences between the two categories are not significant among the older children (cf. similar tendencies in the case of teachers' marks, above). The Low-Status pupils are not only low in number of correct answers, but also — which is not a necessary consequence — high in number of errors (as is seen from an analysis of the non-verbal test, which was most time-limited and therefore perhaps most inducing to carelessness).

### B. *Variables related to "perseveration" and "speed"*

The concept of "perseveration" has for a long time interested psychiatrists, personologists and factor analysts (NEISSER, MÜLLER, & PILZECKER, HEYMANS & WIERSMA, SPEARMAN, and others). Recent surveys of the problem of perseveration and its psychological unitariness have been given, for example, by EYSENCK (1953) and by LEVINE (1955). Whilst the conception of SPEARMAN (1927) of perseveration as a general factor $p$ — the "inertia" of the mental energy — has had to be given up more and more before the demonstration of a plurality of relatively independent factors, sensory perseveration, perseveration at motorical alternation, etc., nevertheless several investigations have also shown that measures of perseveration are not too specific in so far as they have been demonstrated to correlate positively with certain other, "broader" personality variables. Therefore they also have a certain interest in a more general psychological investigation. Thus, Cattell (1946, 1953) asserts that tests of persevertion may be regarded as indicators of individual proneness to specific styles of integration and adjustment. Thus, low values of perseveration are said to be common among natural leaders, individuals with self-confidence and ability at making good use of a relatively low *IQ*; whereas high values are common among habit-ridden, somewhat dreamy and sentimental people, among whom strong inhibitions and neurotic symptoms of a general nature are usual. It is obvious that this difficulty of shifting set — in so far as it is of a more general character (role inflexibility) — may be a handicap in "winning friends and influence". It seemed therefore of interest also to include a test-situation related to the concept of perseveration in the present test battery. Our hypothesis was, of course, that the High-Status individuals would show less tendency to perseveration or — expressed positively — greater ability at shifting set.

A series of perseveration tasks were tried out (the following tasks from Cattell 1953, p. 269 et seq.: Adult 1, 2, and 4, Child 1, 2, and 3). Some of the tasks examined seemed to be too difficult for the youngest subjects (such as the maze drawing in Adult 4). In one task there was a chance of cheating which was difficult to control in group testing (*W* written forwards and backwards could look very similar in Child 3). In several tasks the indices seemed to mirror the initial difficulty of the task too much (those who reached very high results in the first part of the tests had difficulties in reaching proportionally equally good results in the second, as, e. g., in Adult 1). This very point has been stressed by Walker, Staines, & Kenna (1943, 1945), who have pointed to the importance of measuring the alternation difficulty independently of the influence of the initial difficulty of different tasks (cf. also Smith 1952). This is done by expressing the perseveration as a ratio of the proficiency at the task as theoretically expected, to the proficiency as empirically observed. This was done most clearly in two of the tasks tried: (a) The subject writes (1) *abc* as quickly as possible for 15 seconds, (2) then *ABC* (15 sec.), (3) *abc* again (15 sec.), (4) *ABC* again (15 sec.), and, finally, (5 + 6) *aAbBcC* in two periods of 15 seconds each. (b) The subject draws rows of triangles (1) with the points upwards (15 sec.), (2) downwards (15 sec.), (3) upwards again (15 sec.), (4) downwards again (15 sec.), and, finally, (5 + 6) alternate rows in two periods of 15 seconds each. The observed proficiency in the alternation task was compared with the result which could be expected on the basis of the earlier proficiency of the separate tasks, by using the formula $\frac{(1)+(2)+(3)+(4)}{2[(5)+(6)]}$. The indices obtained

Table 9.28. Tests of "Perseveration" and "Speed"
(Beta Basic and Beta Restricted)

| Var. | Cat. | $M_H$ | $M_L$ | *H%l* | *H%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|---|
|  | M | 19.6 | 20.7 | 73 | 32 | 30+38 | ++ | .002 |
| *P* | F | 19.7 | 19.8 | 58 | 41 | 36+32 | ++ | .2 |
|  | R | 19.7 | 20.6 | 66 | 34 | 32+32 | ++ | .03 |
|  | M | 28.1 | 21.6 | 32 | 68 | 31+31 | ++ | .01 |
| $S_A$ | F | 26.7 | 24.0 | 41 | 59 | 32+32 | ++ | >.3 |
|  | R | 28.3 | 22.9 | 36 | 62 | 28+29 | ++ | .1 |
|  | M | 48.9 | 36.7 | 42 | 58 | 33+31 | ++ | >.3 |
| $S_B$ | F | 36.6 | 30.3 | 32 | 68 | 34+34 | ++ | .008 |
|  | R | 41.1 | 34.2 | 42 | 58 | 31+31 | ++ | >.3 |

Table 9.29. Tests of "Perseveration" and "Speed"
(Beta Extra: U, V)

| Var. | Class | $M_A$ | $M_B$ | $M_C$ | $M_D$ | *AB%l* | *AB%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|---|---|---|
| *P* | U | 20.5 | 19.7 | 20.0 | 19.7 | 50 | 47 | 12+15 | − o + | >.3 |
|  | V | 19.6 | 20.1 | 20.2 | 20.1 | 50 | 46 | 16+13 | + o + | >.3 |
| $S_A$ | U | 19.8 | 20.8 | 19.1 | 18.9 | 46 | 50 | 13+14 | + o + | >.3 |
|  | V | 24.0 | 21.7 | 22.8 | 23.7 | 47 | 50 | 17+12 | + o + | >.3 |
| $S_B$ | U | 22.5 | 27.7 | 24.5 | 22.3 | 50 | 50 | 12+14 | + o o | >.3 |
|  | V | 33.0 | 43.0 | 35.0 | 27.4 | 29 | 67 | 14+15 | + o + | .09 |

thus were transferred to standard scores (with $M = 10$ and 1 $S.D. = 1$) and added together. The total score (called *P* in the tables) thus averaged 20.

The results are given in Tables 9.28 and 9.29. In the extreme categories, all differences go in the expected direction; the boy differences are clearly significant, those of the girls are less marked. In classes *U* and *V* the differences are inconsiderable. Compared with intelligence and school proficiency, for example, the perseveration measured with the methods described here does not appear to be of such decisive importance, even if the direction of the differences and single significances indicate that it is not wholly unimportant.

Quickness of performance is a factor important in many connections.

We decided therefore to include two different measures of speed: ($S_A$) the results of a "fluency" task (to write down the names of round objects, things to eat, and words beginning with *s*; time: 1 minute per sub-task; cf. CATTELL 1953, p. 194); ($S_B$) the results of drawing in the first part of the CATTELL maze (*op. cit.*, p. 276). As quickness ("ideo-motor" speed as well as "fluency") is a highly valued trait both in work and in general social interaction, our hypothesis was, of course, that the High-Status individuals would show themselves to be, on the average, quicker than the Low-Status individuals.[3]

On the whole, this was also the case (all differences obtained in the expected direction), even if the degree of significance was not important.

## 2. Variables Related to Interaction Efficiency

### A. *Variables related to "social dependability"*

Certain demands for "honesty" and "fairness" are common to the norm-world of both adults and children and are usually considered as a necessary basis for efficient interaction.[4] Examples of non-dependability, lying and cheating, have been mentioned by the pupils as reasons for rejection. Our hypothesis was that the Low-Status individuals would show more signs of "dishonesty" in situations where there are possibilities of lying and cheating. Of the many different types of "honesty" tests which have been tried (cf., the classical study: HARTSHORNE & MAY 1928, and surveys by CHILD 1941 and JONES 1954), a few simple situations were selected.

Two of these were designed to disclose tendencies towards cheating. In connection with the SIEGVALD intelligence test (cf. above), two extra problem sheets with three problems each were distributed to the pupils,

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[3] Correlations between speed of association ("fluency") and other personality factors are demonstrated, for example, in investigations by CATTELL (1934 b, with "surgency", cf. above factor 11 in the Junior P. Quiz), by BÉNASSY & CHAUFFARD (1947, with extraversion and intelligence), and by GEWIRTZ (1948, with extraversion). A survey is given, e. g., by EYSENCK (1953, p. 294). A high value on "fluency"-tests has been interpreted as a "tempérament ludique", a playful temperament combined with ease at winning contacts (BÉNASSY-CHAUFFARD & BÉNASSY 1951). However, a high value could be reached in partly different ways: the results in "fluency"-tasks do not only mirror variables such as richness or poverty of ideas, but also freedom from inhibition *v.* inhibition, or quantity ambition *v.* quality ambition (cf. the discussion of the psychological interpretation of the number of answers in the Rorschach test, RAPAPORT 1946, p. 119—120).

[4] Also in a criminal gang, where although these demands are not valid with respect to outgroups, they are usually important with respect to the relations within the group.

Table 9.30. Tests of "Honesty"
(Beta Basic and Beta Restricted)

| Var. | Cat. | $M_H$ | $M_L$ | $H\%l$ | $H\%h$ | $Tl+Th$ | DD | P |
|---|---|---|---|---|---|---|---|---|
| "Cheating" | M | 1.45 | 1.70 | 60 | 46 | 20+46 | ++ | >.3 |
| (problem | F | 1.09 | 2.12 | 73 | 39 | 22+44 | ++ | .02 |
| solving) | R | 1.14 | 1.84 | 60 | 37 | 30+30 | ++ | .1 |
| "Lying" | M | 1.70 | 2.61 | 57 | 41 | 37+29 | ++ | >.3 |
| (books | F | 0.70 | 2.27 | 57 | 35 | 46+20 | ++ | .2 |
| read) | R | 1.00 | 2.77 | 54 | 38 | 39+21 | ++ | >.3 |

one before the intelligence test, the other after it. Two of the three problems were so difficult that they were definitely beyond the ability of the children (the three problems were to be solved in three minutes). On the back of the sheet answers were given, of which only the first one was correct. The pupils were informed that answers were given on the back ("because the problems had been used in classes, where the pupils had been allowed to correct the answers themselves"), but they were instructed not to look at them. Giving the wrong answers in spite of the instructions was judged as "cheating".[5] — "Lying" tendency was measured by means of a list of 50 book titles, out of which 30 referred to books relatively well-known among Swedish school-children (10 boys' books, 10 girls' books, and 10 books for both boys and girls), whereas the remaining 20 were freely invented by the author and thus did not refer to any books at all. The task of the subjects was to underline the books they had read ("We want to find out who has read most"); small prizes in the form of bars of chocolate were promised and given to the "most well-read" pupils on the different grade levels. Although underlining a single title of a non-existent book may be due to errors in remembering, in most cases (and especially when many are made) these underlinings may rightly be considered as "lying".

The results are seen from Table 9.30. With respect to "cheating", we give the mean number of "cheating answers" (each individual could give four such at the most); with respect to lying, we give the mean number of underlinings referring to non-existent books. The section lines in our double-directed histograms are in this case drawn between those who have no cheating answers and those who have one such answer, and between those who have no underlinings referring to non-existent books and those who have one such underlining. All differences in the extreme categories go in the expected direction, but only in one case are they significant (girls: "cheating").

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[5] The first problem sheet was taken from WIGER 1951; the second was designed from similar problems. In WIGER's investigation (dealing with 13—14 years old boys) it was found that the discrepancy between general opinion and specific behavior was important (whereas almost all children rejected cheating as a principle, nevertheless nearly half of them cheated in these problems).

### B. *Reactions on "superego-blocking" in social situations: Aggressive guilt-denial v. guilt-admittance*

The ability to admit errors instead of aggressively denying responsibility or even putting the blame on some other individual is of importance for efficient social interaction. We expect that our Low-Status individuals lack this ability more often than do our High-Status individuals.

In order to examine this hypothesis, we applied the children's version of the ROSENZWEIG's Picture-Frustration Study to our subjects (ROSENZWEIG, FLEMING, & ROSENZWEIG 1948; for the general discussion of the theory and methodology of this test, cf., e. g., ROSENZWEIG 1938, 1944, 1949, 1950, ROSENZWEIG & MIRMOW 1950, HOLZBERG & POSNER 1951, LINDZEY & GOLDWYN 1954, CHRISTIANSEN 1955). As is well-known, this consists of 24 cartoon-like pictures illustrating common frustrating situations. With respect to scoring we should like to stress the importance — not sufficiently observed — of ensuring objectivity by cross-individual analysis. As was pointed out when we dealt with ratings (cf. above), it is better to rate all individuals with respect to one variable before going on to the next variable, rather than to rate one individual with respect to all variables before going on to the next individual. Analogously, we could distinguish two ways of proceeding when dealing with ROSENZWEIG data: one *individual-directed cross-item procedure* (going through all the answers of individual 1 before going on to individual 2, etc.), and one *item-directed cross-individual analysis* (going through the answers to item 1 from all individuals before going on to item 2, etc.). In order to facilitate the latter procedure, the following arrangements were made. Each subject was given a specific answer sheet, divided into 24 numbered cells. In these cells he was to write his answers. In analyzing the data, the answer sheets were cut into cell-cards, whereby each card obtained a symbol identifying the subject. By this procedure, the classifying was simplified, because there was greater

Table 9.31. Reactions on "Superego-Blocking": ROSENZWEIG Picture-Frustration Study (Beta Basic and Beta Restricted)

| Var. | Cat. | $M_H$ | $M_L$ | $H\%l$ | $H\%h$ | $Tl+Th$ | $DD$ | $P$ |
|---|---|---|---|---|---|---|---|---|
|  | M | 3.63 | 4.37 | 58 | 43 | 31+37 | ++ | >.3 |
| *E* | F | 3.51 | 4.10 | 67 | 34 | 33+35 | ++ | .02 |
|  | R | 3.42 | 4.23 | 67 | 35 | 30+34 | ++ | .03 |
|  | M | 3.44 | 2.78 | 44 | 56 | 34+34 | ++ | >.3 |
| *I* | F | 3.90 | 3.16 | 32 | 71 | 37+31 | ++ | .004 |
|  | R | 3.72 | 3.06 | 34 | 66 | 32+32 | ++ | .03 |

ease in surveying and comparing, while there was less risk of the influence of pre-established ideas about certain individuals.

There are still many uncertainties about interpretation. The question of the "reality level" of the reaction is both important and difficult. In this connection we will only refer to the pertinent discussion by ROSENZWEIG (1950), BORGATTA (1951 b), and CHRISTIANSEN (1955).

In the present analysis we want to concentrate on the eight "superego-blocking" situations involving some "accusation, charge, or incrimination of the subject by someone else" (ROSENZWEIG, FLEMING, & ROSENZWEIG 1948, p. 143), since these situations are least ambiguous from our point of view. In these, "extrapunitive" reactions usually mean guilt-rejection or guilt-projection, whilst "intropunitive" reactions as a rule mean guilt-admittance. Thus, we expect, more specifically, that the High-Status children would have a greater number of *I*-scores and a lower number of *E*-scores on the eight "superego-blocking" pictures. As is seen from Table 9.31 this was, in fact, the case (the differences being significant for Beta Restricted and for the girls of Beta Basic).

### 3. Selected "Narrow" Variables Considered to be Related to the General Concept of "Maladjustment" and Thus to Both Working and Interaction Efficiency

We have repeatedly seen above that differences have been reported in variables which are more or less related to the vaguely delimited area of "maladjustment". Thus, for example, according to the teachers the High-Status individuals less often show behavior problems and less often have such intellectual, physical, and emotional characteristics as are common among problem children. Furthermore, in self-report devices the

Table 9.32. The CATTELL-ANDERSON Music Preference Situation: "Adjustment *v.* Frustrated Emotionality" (Beta Basic and Beta Restricted)

| Cat. | $M_H$ | $M_L$ | *H%l* | *H%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|
| M | 3.63 | 2.58 | 35 | 73 | 23+15 | ++ | .05 |
| F | 3.58 | 3.53 | 48 | 53 | 21+17 | ++ | >.3 |
| R | 3.88 | 2.61 | 29 | 62 | 14+21 | ++ | .1 |

High-Status children less often described themselves in terms of "maladjustment" and "unhappiness", less often said they had "neurotic" and "physical" symptoms of different kinds (California Test of Personality, the *N* Questionnaire, and certain factors of the Junior Personality Quiz). In the present section we will examine whether differences in test behavior can be found in a few experimental situations which are considered by the test-constructors to indicate certain aspects of "maladjustment".

### A. *The* CATTELL-ANDERSON *Music Preference Situation: "Adjustment v. Frustrated Emotionality"*

The CATTELL-ANDERSON Music Preference Test of Personality (CATTELL & ANDERSON 1953, CATTELL & SAUNDERS 1954) is constructed from the common conception of some kind of connection between the reaction to different kinds of music on one hand and one's emotional life on the other. The subjects are instructed to state on an answer sheet how they like different items of piano music. The interpretation of the preference reactions is bound up with the empirical correlations with the 16 *P.F.* Questionnaire and with comparisons with clinical syndromes.

The test consists of two parts: one *A* Part and one *B* Part, each including 50 short items. In the present investigation only Part *A* (24 minutes) was used in order to avoid exhausting the subjects too greatly. CATTELL's answer sheets with *L-I-D* (like-indifferent-dislike) were replaced by sheets with the symbols + ? —. The music was transferred from the gramophone record to a tape-recorder; at the same time the American text was replaced by a Swedish one. The recorder was stopped three times during the test session (after items Nos. 10, 20, and 35) for a short rest and a warning against too one-sided an attitude (too many +'s, too many —'s, or too many ?'s). In the *AB* Part of Beta Basic, the test was given only to the older children due to shortage of time.

For our present purposes, we focus our interest on Factor 1 (Adjustment *v.* Frustrated Emotionality).[6] A high score is said to indicate freedom from acute, neurotic symptoms, high degree of "peace of mind", freedom from bodily symptoms of emotionality, whereas a low score is said to go with "jitteriness", excessive sympathetic activity, exhaustion, resentment, and suspicion. We expect that the High-Status individuals would get higher values than the Low-Status individuals. Tendencies in this direction are in fact shown in Table 9.32.

### B. *The Body Sway Situation*

The concept of "suggestibility" has been extensively discussed by several research workers (a survey is given by EYSENCK 1947). Two partly contradictory hypotheses about the nearest correlate of "suggestibility" have been given: one considers it to go together with "hysteria-extraversion", the other with "neuroticism". Sometimes different tests designed to measure "suggestibility" have been shown to have almost no intercorrelations, and the question has therefore been raised as to whether the concept of "suggestibility" might be considered to cover a functional unity of variables (V. BROWN 1916). In other cases certain positive correlations have been obtained (AVELING & HARGREAVES 1921). EYSENCK found a close connection between "suggestibility" and "neuroticism", but no correlation between "suggestibility" and "hysteria" (1947, 1952). According to EYSENCK, HULL's Body Sway Test (in which the subject listens to suggestions consisting of variations on the general theme: "You are falling forwards"; cf. also TAKALA 1953, p. 35 et seq.) is one of the most simple and dependable measures of "suggestibility".

In the present investigation we expect that the Low-Status individuals will be more influenced by such suggestions than the High-Status children, as we have assumed that Low-Status individuals should show more symptoms of disturbances of a neurotic character than High-Status children.

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[6] The other factors will not be discussed here, since this test was included in the first place for test-explorative purposes. It appeared to be tiring to certain children, and is perhaps not quite adequate for the present age level. Only three of its factors show "odd-even consistency" and "equivalence" (*A* part *v.* *B* Part) higher than .5, viz. Factors 1, 4, and 5 (cf. CATTELL & ANDERSON 1953, p. 13). Of these, the first one, analyzed here, is most immediately concerned with our present problem.

A modification of HULL-EYSENCK's Body Sway Test was used in the *AB* Part of Beta Basic. In our version, the test consisted of four parts. During the first 30 seconds the subject was simply instructed to stand as still as possible with his eyes closed and blindfolded, his hands by his sides and his feet together. The "sway" of the subject was measured with the aid of a half-centimetre scale fastened on the wall, along which moved a pointer, connected by a string to the subject's collar.[7] — The following three periods made up the suggestibility phase. We considered it to be of the greatest importance to create a unitary attitude towards the test-situation, as we had a feeling that differing results with the test may often be due to the fact that the subjects have had different ideas about the behavior expected from them. Thus, we did not urge anybody to relax and concentrate on the voice; on the contrary, the subject was instructed to attempt to stand as still as possible and not to worry about the fact that the experimenter's voice, as recorded on the tape recorder, would say that he could not stand still. The suggestions were designed to have a gradually stronger suggestive influence during the three periods. It must be considered essential to have a standardized formulation. Not to use a recording but to depend on the constant tone of the experimenter is, of course, open to the gravest objections. It is also of little value not to include information about the exact formulation, speed and duration of the suggestions in the report of results, as comparative investigations cannot otherwise be performed. In the present case, the suggestions were formulated as follows: In the first period, "You cannot stand still. You are swaying. You are falling forwards." This was repeated four times in 40 seconds. In the second period the same statement was made eight times in 40 seconds. In the third period, "Now you feel that you cannot stand still. You are swaying, swaying, and are falling forwards, forwards." This was repeated four times in 40 seconds in a louder voice.

Four scores were obtained from this test-situation: the maximal "sway" in centimetres during the four different test periods. — The results are given in Table 9.33. The differences with respect to body control (*BC*) in the suggestion-free period are not significant, but go in the expected direction; lack of body control is more common among neurotics than among normals according to EYSENCK. All the differences with respect to the suggestion periods also go in the assumed direction ($Sugg_1$ = the score of the first suggestion period, etc.; $Sugg_t$ = the total score). However,

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[7] The technique of sway registration is of course fairly crude (better methods are, e. g., the photographic ones, used by BOMAN & JALAVISTO 1953), but the original technique was retained for the sake of comparability and simplicity.

Table 9.33. The Body Sway Situation
(Beta Basic and Beta Restricted)

| Var. | Cat. | $M_H$ | $M_L$ | *H%l* | *H%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|---|
|  | M | 1.72 | 2.46 | 58 | 42 | 24+26 | ++ | >.3 |
| *BC* | F | 1.88 | 2.54 | 59 | 43 | 22+28 | ++ | >.3 |
|  | R | 1.53 | 2.88 | 65 | 33 | 17+21 | ++ | .1 |
|  | M | 1.84 | 2.20 | 56 | 44 | 25+25 | ++ | >.3 |
| $Sugg_1$ | F | 1.76 | 2.18 | 61 | 41 | 23+27 | ++ | .3 |
|  | R | 1.81 | 2.48 | 58 | 37 | 19+19 | ++ | >.3 |
|  | M | 2.74 | 3.04 | 52 | 48 | 25+25 | ++ | >.3 |
| $Sugg_2$ | F | 1.90 | 2.46 | 65 | 40 | 20+30 | ++ | .2 |
|  | R | 2.67 | 3.40 | 55 | 38 | 22+16 | ++ | >.3 |
|  | M | 2.30 | 3.36 | 61 | 36 | 28+22 | ++ | .2 |
| $Sugg_3$ | F | 1.86 | 2.36 | 73 | 32 | 22+28 | ++ | .01 |
|  | R | 2.06 | 3.73 | 67 | 30 | 18+20 | ++ | .05 |
|  | M | 6.88 | 8.60 | 52 | 48 | 27+23 | ++ | >.3 |
| $Sugg_t$ | F | 5.52 | 7.00 | 65 | 37 | 23+27 | ++ | .09 |
|  | R | 6.53 | 9.60 | 57 | 35 | 21+17 | ++ | >.3 |

a distinctly significant difference between High-Status and Low-Status pupils is only found among the girls (final period).

## VII. EXPERIMENTER-REPORT LEVEL OF DESCRIPTION: VARIABLES FROM OBSERVATION OF BEHAVIOR IN GROUP WORK SITUATIONS

### 1. "Field Observation" of Behavior in Classroom Situations

Because of the preference aspect mainly used — choice of working partners — it ought to be especially interesting to observe the free work behavior of our extreme-status individuals in the ordinary school situation. Hence, in spite of the great methodological difficulties, we made preliminary attempts at "field observations" in the classrooms.

The general procedure was as follows: in the *AB* Classes — those classes which had the greatest experience of group work — observations were made of the sociopreferentially extreme individuals during a series of ordinary lessons with group work or free individual work in which there were possibilities of co-working. Four lessons (with an interval of time between them) were spent in each of the twelve classes. While the work went on as usual, I observed the behavior of the selected pupils. In each class there were eight children belonging to Beta Basic, and each of them was observed for four five-minute periods (one five-minute period in each lesson).

The teacher introduced me to the class as being interested in looking at the work, but, of course, nothing was said about the fact that I was going to direct my attention to selected individuals. I changed place from time to time and tried to avoid letting individual children feel that they were being observed. As a rule they were not very interested in my presence, but eagerly engaged themselves in work or in talking to their partners. I should like to report my general impression of the very considerable pleasure in work that most of the children displayed in nearly all classes (some exceptions only among the older children). "Group work and gymnastics are greatest fun" — to use the words of a third grade boy. Instances of resistance against going away from the work into the playground were not infrequent and may surprise individuals holding the popular idea that most children dislike school work. The work going on in the different classes was of various kinds; and the kind of furniture grouping used was also different:

*3a*: The pupils' desks were arranged in five blocks. The children's groups were engaged in work on Norrmalm (a part of Stockholm) and had been given the following written instructions: "Draw a large map of Norrmalm. Color it. Show the most important streets. Draw small pictures of the most important buildings, so small that you may cut them out and fasten them on the map. Find out from your book about Stockholm which buildings are most important and make a list of them. Look for press-cuttings (pictures and stories) about buildings in Norrmalm, gum them on to a work sheet and write a short story about them."

*3b*: The desks were arranged in seven blocks. Most of the pupil groups were drawing pictures of birds or pictures of the main parts of the world. Several children worked on the same picture simultaneously.

*4a*: The desks were arranged in eight blocks. The pupil groups all had the same tasks. The two first lessons dealt with a group project in Swedish history. Each group had a sheet with questions, referring to a section in the history book. The pupils were instructed to work together on these questions; one pupil in each group was the "secretary", who was to write down the answers. The two last lessons dealt with a similar group project in Swedish geography.

*4b*: The pupils in this class had less experience of group work than the other classes, and no group work was going on at the time. At my wish, the class was divided into groups of four, whereby two groups were composed of Beta Basic pupils only: one containing the four boys (*Hemo*, *Hemon*, *Lemo*, *Lemon*), and the other containing the four girls (*Hefu*, *Hefiu*, *Lefu*, *Lefiu*). The first lesson dealt with questions about geography, the second and third lessons with questions about history, the fourth with arithmetical problems.

*5a*: The pupils were seated along both sides of two rows of desks and not in separate groups. They were engaged in individual work in geography (different countries) and had possibilities of co-work, discussion, and help.

*5b*: The desks were arranged in eight blocks. The main theme was shared by the whole class (Greece), but different sub-projects were available and could be chosen by the different groups: (1) The geography of Greece. (2) How the Greeks inhabited their own country and other places around the Mediterranean. (3) Legends about the oldest history of Greece. (4) The war between the Persians and Greeks. (5) The Greeks' conquest of the world. (6) Life in old Greece: A. The Greek towns. 1. Athens — the commercial town. 2. Sparta — the military town. B. Literature, drama, and art in Greece. C. Socrates and philosophy. D. The gods of Greece. E. Olympic games.

*6a*: The desks were arranged in five blocks. Group work on the geography of the U.S.A. was in progress during the first two lessons, on mineral resources of the world during the last two lessons. Each group made large maps and made different contributions to a portfolio on the general subject.

*6b*: The desks were arranged in six blocks. The first three lessons dealt with different foreign plants, such as the cacao tree, the caoutchouc tree, the suger cane, the tobacco plant, and the bamboo. The fourth lesson dealt with arithmetical problems. The pupils did individual work, but had possibilities of asking each other questions and helping each other.

*7a*: The class was engaged in laboratory experiments in physics in a special room with long tables. Boys and girls separately. Groups of two-four pupils. Subject: The lever. The *U*-tube. Archimedes' principle.

*7b*: Laboratory experiments in physics. Similar to 7a.

*8a*: The desks were arranged in six-eight groups, the numbers varying during the different lessons. The pupils were doing free individual work with possibilities of discussion and help. Main subjects: A. Great Britain builds up its empire of the world. B. Other European colonial powers. C. The history of the United States: "From wilderness to a Great Power". Each subject was planned on a series of work sheets, including summaries of development in headlines, references to pertinent literature, maps, and questions to be answered on the basis of reading matter and maps.

*8b*: The desks were placed conventionally in rows, but the pupils were allowed to sit where they wanted to. They carried out individual work with possibilities of discussion and help. Co-work in groups of two was encouraged: it was recommended that the pupils changed papers for correction, and that one of them looked through reference books, while the other was writing, etc. Main subjects: A. The development of agriculture and lumbering in Sweden. B. The history of intercommunication. Work sheets similar to those in 8a were employed.

For each five-minute period a recording form was used of the general structure shown in Table 9.34. The first four minutes were the basic observational units. For each minute short verbal notations were made in the empty spaces below the heading "verbal description". After each such

Table 9.34. Group Work Observation Form

| | Verbal description | Symbols |
|---|---|---|
| 1 | | owe owe |
| 2 | | owe owe |
| 3 | | owe owe |
| 4 | | owe owe |
| Total | | OWE OWE |
| | | 1) *O* pass : : : *M* : : : act<br>2) *O* neg : : : *M* : : : pos<br>3) *W* pass : : : *M* : : : act<br>4) *W* neg : : : *M* : : : pos<br>5) *E* pass : : : *M* : : : act<br>6) *E* neg : : : *M* : : : pos |

minute description, the symbols: *owe owe* are given in the form. These six letters stand for the six main variables on which we intended to focus our observations. The letters *o*, *w*, and *e* refer to the "*o*thers", the "*w*ork", and the "*e*go". The first *owe* is used for recording data pertinent to the activity-passivity aspect, the last *owe* for data pertinent to the positivity-negativity aspect. With the aid of simple sub-scripts (underlinings, dots, and letters) we compressed some of the information given in the verbal description. The following signs were used:

For the activity-passivity aspect with respect to "others" and "work":
  - (simple underlining) real activity during the minute of the kind symbolized by the letter;
  . (dot) a single "actlet" only (cf. Table 9.35).
For the activity-passivity aspect with respect to "ego":
  ˋ (grave accent) "being influenced by others";
  ˊ (acute accent) "influencing others".
For the positivity-negativity aspect:
  *n* (the letter *n*) negativity;
  - (simple underlining) positivity or "absorbed" activity of the kind symbolized by the letter.

The fifth minute was used to give a total description of the four-minute period. If time allowed, the signs for the different minutes were added together in the total formula: *OWE OWE*, and this total formula was translated into rating scale values at the bottom. However, this could equally well be done afterwards.

The risk of subjectivity in rating observations is great. One way of lessening this risk — too often overlooked — is to use *explicit translational rules* for translating interaction facts (interaction units) into rating scale values. The rules employed in the present case may be seen from Table 9.35.

A few words should be said, in passing, about the specific characteristics of our procedure as compared with other possible approaches. A few preliminary attempts with BALES' well-known categorizations (1950) showed that these otherwise very useful methods were not quite adequate to the present problem. Three characteristics were especially unfortunate in our case. (1) BALES' method is primarily directed towards *interaction* units and does not specify *other kinds of acts.* It is therefore better suited for an analysis of discussion than for a situation which besides discussion may also consist of single-person work, etc. (2) BALES' method is primarily directed towards *classifying* interaction, not towards assessing the *relative frequency of activity and passivity*, which in our case was a very important fact. (3) BALES' method demands classifying a specific interaction unit either in the task area or in the emotional area, which leads to difficulties of categorization (this fact has recently been emphasized by KUUSELA, 1956, p. 44). Besides, BALES' categories are too detailed in the case of interactions to be reliably employed in the classroom surroundings where the recording facilities of the experimental room do not exist. Our specific approach, then, means in the first place certain important additions of perspectives, each time unit being assessed from *three* points of view: (a) *kind* (direction) *of activity* (others, task), (b) *degree of activity-passivity*, (c) *degree of positivity-negativity* expressed. In the second place it means a necessary disregarding of certain nuances of interaction as classified by BALES. The method thus employed is not designed to be a general procedure suitable to a variety of problems, but an approach especially adapted to the specific observation situation in the present investigation.

When the behavior records had been translated into seven-step scales for each variable according to the principles given above, the different period scores were added together. Thus the resulting score for a single variable may lie between 4 and 28. Starting from our general "adjustment-efficiency" hypothesis and remembering especially the teacher ratings of co-working variables, we expect the High-Status pupils to obtain higher values than the Low-Status pupils with respect to all the six variables. The results are given in Tables 9.36 and 9.37. Among other things we observe: (a) that all differences go in the expected direction, (b) that many of them are clearly significant, (c) that the smallest differences are found

Table 9.35. Translational Rules for Translating Interaction Units into Rating Scale Values

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I. *O-VARIABLES (OTHERS-RELATED)*:

a. *Variable Oa ("passivity v. activity")*

1. 4 periods O-passivity
2. a single interactlet (answer, borrowing, looking)
3. a few interactlets
4. 1 period real interactivity (asking, helping, spontaneously informing etc.)
5. 2 periods real interactivity
6. 3 periods real interactivity
7. 4 periods real interactivity

b. *Variable On ("negativity v. positivity")*

1. 3—4 periods expressed negativity
2. 2 periods expressed negativity
3. 1 period expressed negativity
4. neutral or non-interactive
5. 1 period expressed positivity or absorbed co-acting
6. 2 periods expressed positivity or absorbed co-acting
7. 3—4 periods expressed positivity or absorbed co-acting
   (*NB*: 5—7 no expressed negativity)

II. *W-VARIABLES (WORK-RELATED)*:

a. *Variable Wa ("passivity v. activity")*

1. 4 periods *W*-passivity
2. a single actlet (fetching books, paper etc., passively looking at the work going on)
3. a few actlets
4. 1 period real activity (work-related discussing, reading, writing etc.)
5. 2 periods real activity
6. 3 periods real activity
7. 4 periods real activity

b. *Variable Wn ("negativity v. positivity")*

1. 3—4 periods expressed negativity or complete passivity (*W* & O)
2. 2 periods expressed negativity or complete passivity
3. 1 period expressed negativity or complete passivity
4. neutral (no negative or positive expressions, no period complete passivity but also no period of absorbed work)
5. 1 period expressed positivity or absorbed work
6. 2 periods expressed positivity or absorbed work
7. 3—4 periods expressed positivity or absorbed work
   (*NB*: 5—7 no expressed negativity)

III. *E-VARIABLES (EGO-RELATED)*:

a. *Variable Ea ("passivity v. activity")*

1. 3—4 periods being influenced by others
2. 2 periods being influenced by others
3. 1 period being influenced by others
4. self-sufficient or two-way directed
5. 1 period influencing others
6. 2 periods influencing others
7. 3—4 periods influencing others

b. *Variable En ("negativity v. positivity")*

1. 3—4 periods expressed negativity ("I cannot")
2. 2 periods expressed negativity
3. 1 period expressed negativity
4. neutral
5. 1 period expressed positivity or helping
6. 2 periods expressed positivity or helping
7. 3—4 periods expressed positivity or helping
(*NB*: 5—7 no expressed negativity)

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for the amount of interaction, (d) that in some cases smaller differences are found on the higher grade levels than on the lower ones. We may conclude that negative attitudes on the part of the subject towards the work, towards the co-workers, and towards himself ("I cannot" reactions) were more frequent among the Low-Status pupils than among the High-Status pupils. In addition, the former were less actively engaged in the work, and made fewer attempts to influence the others by help, advice, or orders. With respect to interaction activity, the differences are usually insignificant, although tendencies to greater interaction among the High-Status children could be seen (most clearly among the older boys).

It is obvious that the conclusions drawn here are very tentative, since the whole procedure of observation may be subject to many disturbing influences, such as, for instance, the differences in the composition of groups, the differences in the kind of work, and bias in the experimenter's own perception. On the other hand, some differences were so very striking that biased perception could be of no importance, and, moreover, the procedure used was designed to rule out subjectivity as far as possible. Still, in this important area of work studied directly in the school situation, there is need for further research with more refined methods, employing filming, check-observers, and so on. In spite of the methodological inadequacies of

Table 9.36. Observation of Group Work Behavior
(Beta Basic)

| Var. | Grade level | Sex | $M_H$ | $M_L$ | *H%l* | *H%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|---|---|
| *On* | 3—5 | M | 20.3 | 15.2 | 0 | 92 | 11+13 | ++ | <.001 |
| | | F | 19.6 | 15.0 | 21 | 90 | 14+10 | ++ | .004 |
| | 6—8 | M | 18.9 | 16.3 | 20 | 71 | 10+14 | ++ | .04 |
| | | F | 20.3 | 15.9 | 9 | 85 | 11+13 | ++ | .001 |
| *Oa* | 3—5 | M | 19.3 | 15.1 | 33 | 67 | 12+12 | ++ | .2 |
| | | F | 15.8 | 15.1 | 50 | 50 | 12+12 | +0 | >.3 |
| | 6—8 | M | 17.0 | 12.5 | 25 | 75 | 12+12 | ++ | .04 |
| | | F | 18.1 | 13.7 | 36 | 62 | 11+13 | ++ | >.3 |
| *Wn* | 3—5 | M | 24.3 | 13.3 | 0 | 100 | 12+12 | ++ | <.001 |
| | | F | 25.3 | 15.8 | 17 | 83 | 12+12 | ++ | .004 |
| | 6—8 | M | 24.0 | 18.6 | 33 | 67 | 12+12 | ++ | .2 |
| | | F | 23.8 | 17.5 | 21 | 90 | 14+10 | ++ | .004 |
| *Wa* | 3—5 | M | 26.5 | 17.7 | 8 | 92 | 12+12 | ++ | <.001 |
| | | F | 26.7 | 18.0 | 17 | 83 | 12+12 | ++ | .004 |
| | 6—8 | M | 26.7 | 21.5 | 30 | 64 | 10+14 | ++ | .2 |
| | | F | 26.8 | 19.8 | 9 | 85 | 11+13 | ++ | .002 |
| *En* | 3—5 | M | 18.8 | 14.9 | 15 | 91 | 13+11 | ++ | .001 |
| | | F | 17.1 | 15.1 | 14 | 65 | 7+17 | ++ | .07 |
| | 6—8 | M | 17.6 | 15.7 | 25 | 100 | 16+8 | ++ | .003 |
| | | F | 17.5 | 15.9 | 31 | 88 | 16+8 | ++ | .03 |
| *Ea* | 3—5 | M | 19.0 | 15.7 | 18 | 77 | 11+13 | ++ | .01 |
| | | F | 17.6 | 15.4 | 33 | 78 | 15+9 | ++ | .09 |
| | 6—8 | M | 18.1 | 15.8 | 31 | 88 | 16+8 | ++ | .03 |
| | | F | 17.3 | 15.7 | 38 | 75 | 16+8 | ++ | .2 |

*Key:* See Table 9.35.

the present approach, we have found it of interest to report our experiences, since these may be useful, at least as starting points for the continuing of such research.

## 2. Observation of Behavior in Experimental Small Group Situations ("Miniature Social Situations")

During recent years an increasing number of experimental studies dealing with small groups have been published. These studies have been

Table 9.37. Observation of Group Work Behavior
(Beta Restricted)

| Var. | $M_{Hr}$ | $M_{Lr}$ | *Hr%l* | *Hr%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|
| *On* | 19.7 | 15.0 | 16 | 83 | 19+18 | ++ | <.001 |
| *Oa* | 16.8 | 14.3 | 38 | 63 | 21+16 | ++ | .3 |
| *Wn* | 24.1 | 15.1 | 6 | 89 | 18+19 | ++ | <.001 |
| *Wa* | 26.6 | 17.4 | 11 | 89 | 19+18 | ++ | <.001 |
| *En* | 17.3 | 15.5 | 30 | 100 | 27+10 | ++ | <.001 |
| *Ea* | 18.1 | 15.6 | 30 | 79 | 23+14 | ++ | .01 |

*Key:* See Table 9.35.

influenced by methodological developments within several different areas: research on the effects of co-working (from the classical "together and apart" studies by Mayer 1903, F. H. Allport 1920, 1924, Moede 1920, and others, to the more recent experimentation in, e. g., Ekman 1951 a; cf. surveys by Dashiell 1935, Murphy, Murphy, & Newcomb 1937, Kelley & Thibaut 1954), research on gang behavior (cf., e. g., Thrasher 1927, Whyte 1943, Helanko 1953), research on roleplaying and psychodrama (cf., e. g., Moreno 1924, 1937 a, 1946 a, Jennings 1953), and research on the utilization of "situation testing" in the army (cf., e. g., O. S. S. 1948, and the survey by Ansbacher 1951). The more strict laboratory methods as applied to group investigations have best been made known through Sherif, Lewin (both reporting early experiments in the first volume of "*Sociometry*": Sherif 1937, Lewin & Lippitt 1938), and their associates. It would carry us too far here to discuss in detail the methods used and the results achieved within this very rapidly developing field of research; the reader especially interested in these problems is referred to the recent surveys by Roseborough (1953) and Vinacke (1954). The important characteristics are, of course, that individuals are exposed to conditions which have been planned in advance, so that disturbing variables, which are more or less unavoidable in field observations, may be excluded, at least to a certain extent. In our classroom observations, differences in group composition and differences in kind of work were the most conspicuous disturbing factors. In a few experiments we tried to study the High-Status and the Low-Status pupils in better defined interaction situations.

### A. *"The Complicated Exchange Task"*

As the concept of "work efficiency" is of paramount importance in a discussion of workmate preferences, we found it desirable to study the pupils further in an interaction situation where a certain task was to be performed, viz. a problem solving situation.

Many kinds of problems could have been selected. It was advantageous, however, if, among other things, the task (a) consisted of several sub-problems, so that it was possible to obtain an objective measure of the result; (b) was so adjusted with respect to difficulty that the same task could be used in all our groups (representing grade levels 3—8); (c) contained sub-problems that could stimulate real discussion (for example, unsolvable ones).

Guided by these principles we constructed a "Complicated Exchange Task". Each group member received a form as follows:

*"The Complicated Exchange Task" for Group Work*

a. "Hallo", she said and went away.

b. My aunt is black as coal.

c. The girl usually munched a ball.

d. A long road is not difficult to travel if it leads to a greengrocer.

e. "Breathe deeply", said a guard.

f. A hay-fork fluttered in the wind.

g. "Good morning, children!" said Sancta Claus. "Have you prepared your lesson for to-day?"

h. She placed one swallow in her buttonhole.

i. The necklace tasted nice, she thought, and took another sip.

k. The king had as usual his black cloak and his white collar.

1. The book is a gift from a chimney-sweep.

2. The boy received a piece of bread and butter as a Christmas present.

3. "Good-bye", he said when he met her.

4. The handkerchief lighted a pocket-lamp and looked for the safe.

5. The cock shone, and the sky was blue.

6. She fastened the raspberry-juice around her neck.

7. The priest wispered something in the ear of his spouse, Queen Anne.

8. The queen neighed and bolted away.

9. A good friend usually knows about carrots.

10. The doctor usually knows where the trains stop.

l. The horse stood on one leg and crowed.

m. The sun, the king and the prince received the homage of the people.

o. The nightingale sawed the firewood, and the children piled it up.

11. "Good evening", said the teacher. "Have you been nice this year, children?"

12. A flower does not make a summer.

13. The curtain stood against the wall of the outhouse.

The following instructions were given: "When you look at these sentences, you will soon see that they are curious. Your task is to find a sentence in one column which goes with a sentence in the other column in such a way that, when you exchange the words which are underlined in these two sentences, both sentences will be correct. I will take one example. Imagine that you found the sentence 'the cows neighed' in one column and the sentence 'the horses lowed' in the other column, and that 'the cows' and 'the horses' were underlined like this." (The example is written up in front of the group.) "In this case you are able to exchange the underlined words and in that way obtain two correct sentences. If only one of them is going to be correct, you have *not* done it correctly, and then you will have to try in another way. Anyone is allowed to say which sentences go together; so the first one to find two such sentences, says it to the others. One of you is to have a paper and a pencil and write down which sentences go together." (Paper and pencil are placed in front of the group.) "Write only the letter of one sentence and the figure of the other sentence. If one of the sentences, for instance, has the letter *a* and the other the figure *1*, you thus write *a 1*. You should help each other and check whether the suggestions are correct, before you write them down. Remember, that both sentences should be correct when you exchange the underlined words."

This task was given to 36 groups, each — with two exceptions only — composed of two boys and two girls.[8] Of these groups, 18 were made up of High-Status pupils, and 18 were made up of Low-Status pupils (the same pupils as took part in the other Beta Experiments).

As the reader may see from the problem sheet, most of the exchanges are easily made. In a few cases, however, an exchange will only make one of the sentences correct, and in one case it is impossible to find any connection between the sentences. In some cases, there may perhaps be some doubt as to the correctness of the solution. The present exchange task not only demands ability to solve problems intelligently, but also flexibility in co-

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[8] The two groups from class 6mf consisted only of three pupils each (one boy and two girls).

Table 9.38. A Complicated Exchange Task as Group Work: Preliminary Survey of Comparisons between High-Status and Low-Status Groups

| Class | Time | Correct solutions | Errors | Weighted score | Class | Time | Correct solutions | Errors | Weighted score |
|---|---|---|---|---|---|---|---|---|---|
| 3mf | + | + | — | + | 6mf | + | + | + | + |
| 3a | o | + | — | o | 6a | + | + | — | — |
| 3b | — | + | + | + | 6b | + | + | + | + |
| 4mf | + | + | + | + | 7mf | — | o | + | + |
| 4a | + | + | + | + | 7a | + | + | + | + |
| 4b | — | + | + | + | 7b | + | o | + | + |
| 5mf | — | + | + | + | 8mf | + | o | + | + |
| 5a | + | + | + | + | 8a | + | o | o | + |
| 5b | — | + | + | + | 8b | + | — | — | — |
| + | 4 | 9 | 7 | 8 | + | 8 | 4 | 6 | 7 |
| o | 1 | 0 | 0 | 1 | o | 0 | 4 | 1 | 0 |
| — | 4 | 0 | 2 | 0 | — | 1 | 1 | 2 | 2 |

*Key:*

Weighted score: 3 · Correct Solutions — 3 · Errors — 1 · Time

| | | |
|---|---|---|
| | + | The difference between High-Status and Low-Status Group according to expectation |
| | o | No difference |
| | — | The difference between High-Status and Low-Status Group contrary to expectation |
| Expectation: | | High-Status Groups have higher scores in Correct solutions and Weighted score, lower scores in Time and Errors than Low-Status Groups |

operating, ability to listen to the points of view of the others, and ability to make the co-work systematic and organized.

The working behavior differed from one group to another: in some cases the pupils went through the columns systematically and made a careful check of each pair before writing down the solution, in other cases they reached the solutions in an unsystematic fashion, sometimes writing them down without checking. Behavior when faced with the unsolvable items also varied greatly. Sometimes we met with the detached statement, "Now we cannot do any more", which in certain cases could be referred to a "habit of defeat", a certain resigned, unambitious attitude among children with bad school marks. In other cases we found instead an ambitious reluctance to leave the work before it was finished. The unsolvable items in these cases became obvious frustrations; the half solvable items with

Table 9.39. A Complicated Exchange Task as Group Work: Total Scores (Beta Basic in Small Groups)

| Var. | $M_{HG}$ | $M_{LG}$ | *HG%l* | *HG%h* | *Tl+Th* | *DD* | *P* |
|---|---|---|---|---|---|---|---|
| Time (minutes) | 10.3 | 10.9 | 56 | 44 | 18+18 | ++ | >.3 |
| Number of correct solutions | 9.3 | 7.4 | 28 | 72 | 18+18 | ++ | .02 |
| Number of errors | 1.1 | 2.6 | 68 | 29 | 19+17 | ++ | .05 |
| Weighted score | 14.4 | 4.4 | 28 | 72 | 18+18 | ++ | .02 |

*Key:* $M_{HG}$ = *M*ean for *H*igh-Status *G*roups
$M_{LG}$ = *M*ean for *L*ow-Status *G*roups
*HG%l* = Percentage of *H*igh-Status *G*roups having *l*ow scores in the extra-sociopreferential variable
*HG%h* = Percentage of *H*igh-Status *G*roups having *h*igh scores in the extra-sociopreferential variable

their "goal-nearness" more often seemed to cause irritation than did the totally unsolvable items. In some cases we found persistent attempts to overcome the problem by means of a continued fact-directed discussion on the different possibilities of solving it (*realistic object-attack*); in other cases we perceived critical remarks directed towards the other group members for their insignificant contributions ("you ought to do something useful, too"; *rationalizing attack of individuals*); in still other cases we observed attempts to conceal disappointment by *escaping from the problem field*: beginning to talk about other things or by taking renewed pleasure in the "funny" sentences. On the whole, the children seemed to find the disjointed phrases awfully funny — as is well-known, one theory about "funniness" stresses the experience of incongruence as essential — and when they found the task difficult, they often used laughter as a pretext for retreating from the tension of the problem field.

As partial measures of work efficiency, we may use the number of correct solutions, the number of errors (in the final report), and the time taken. We could also employ some kind of weighted score, trying to reduce these different measures to one. We expected that the High-Status groups would obtain higher scores in Correct solutions, but lower scores in Time and Errors. Table 9.38 gives a preliminary survey of the comparisons. For each class the High-Status Group has been compared with the Low-Status Group; the signs + and — denote whether the differences are according to or contrary to our general expectation. On the whole, our expectations are borne out: we find considerably more plus signs than minus signs. In the lower classes (grades 3—5), High-Status groups always gave more correct solutions than the Low-Status groups, whereas the time taken was longest in the High-Status group just as often as in the Low-Status group. In these classes the task was considered relatively difficult, and Low-Status children sometimes showed rather a lack of persistence. In the higher classes (grades 6—8) we more often found both High-Status and Low-Status groups with the same number of correct solutions (all possible items solved). In these cases the task was considered relatively easy and then the time variable was the one which differentiated between them best. Of the eighteen comparisons dealing with the combined score (arbitrarily weighted according to the table key), fifteen gave differences in the expected direction, and two differences in the non-expected direction; in one case no difference was found. On the whole, the number of correct solutions and the number of errors differed significantly, whereas the time used did not (Table 9.39).

### B. *"The Eight Stories"* and *"the Rotation Phenomenon"*

Beck (1954, p. 116 et seq.) demonstrated that groups dealing with problem solving often showed initial phases where dominant individuals played a great role followed by phases where this dominance was replaced by some kind of regulated "division of labor": each individual was expected to try in turn (*"Reihum-Phänomen"*). As ability to do the task in question developed, the dominance rank order (in certain respects comparable to the pecking order of hens) was thus replaced by strict rules of procedure; to express it more picturesquely, but also more loosely: "right of strength" was followed by "right of law".

Beck was not very much concerned with differences between groups in this respect. It is probable, of course, that not only different kinds of task, but also different types of individuals would give varying results or — at least — show different speeds of development from one phase to the other. In certain kinds of work, such as the complicated completion task above, it is essential that the answers be found quickly; in such a case, the individuals of the group rightly allow the one who arrives at the solution most quickly to give the answer, even though the *same* individual will perhaps thereby sometimes "dominate" the situation through several sub-tasks. Other tasks are more easily performed; quickness is less important, and all the individuals of the group may have a fair chance to do them. Some of these tasks may be considered interesting, others boring. In these latter cases, individuals of a group are probably more apt to apply a "rotation principle": if the tasks attract the group members, it is fair that all get their share of the pleasure; if, on the contrary, the tasks do *not* attract the group members, it is fair that all take their share of the burden.

Among socially efficient individuals we expect to find proper respect for such "social justice", whereas the socially inefficient individual could more often be expected to break these norms, doing more than his share when considering the task pleasant, or doing less than his share when considering the task unpleasant. If this general argument is correct, and if our groups of High-Status and Low-Status individuals differ with respect to "interaction efficiency", we should perhaps be able to demonstrate differences between them in the occurrence of the "rotation phenomenon".

In order to investigate this, we employed a task series, which might be called simply "*The Eight Stories*". The pupils in each group were instructed to make up stories in connection with pictures. In each of the eight cases, the pupils were encouraged first to discuss possible stories freely with each other. Then, after a final decision had been made, one of the group-members should turn on a tape-recorder and recite the story for recording.

The test-situation proper was preceded by my demonstrating the recording technique for the subjects. They were allowed to put a switch, connected with the microphone, in the "on" position, say their names, put the switch back in the "off" position, whereupon I let them hear this recording. This introductory phase was used for three purposes: (a) Each recording tape was given a "signature" so that, when it was replayed, we could hear at once which pupils we dealt with. (b) The subjects got acquainted with the microphone and the "technique of switching on" before the test-situation proper began. (c) The pupils usually found it interesting to hear their own voices, and thus, as a rule, got a positive attitude towards the total test-situation from the very start.

A few words should be said, in passing, about the recording technique. The switch and the microphone were connected in appearances only. In fact, the tape-recorder recorded the pupils' discussion all the time. If, on the one hand, the subjects know that all they say is recorded, their discussion will often be less free and natural. If, on the other hand, the experimenter tries to hide both microphone and recording apparatus, he is sometimes confronted with difficult technical problems when no special laboratory facilities exist. To this fact we may add, that *certain* test-situations will be less natural, if it seems as if nobody is interested in taking a record. Sometimes the subjects then suspect that a tape-recording is being made. Several examples are given in experimental literature where suspicious subjects in such cases have also found the microphone, a fact which easily ruins the total test. For several kinds of interaction recording, at least with children, we should therefore like to recommend the technique used here with a microphone which can apparently be switched off. The advantages are several: (a) In discussions of an informal character, recording may be done with the switch "turned off". The subjects will then be more free and easy. (b) In a more formal report of the results of a discussion, recording may be done with the switch "turned on". This recording may, at least to children, be interesting and represent a motivating factor. (c) By using this technique it is possible to get a clear operational line of demarcation between the less formal interaction process and the more formal end-product. (d) Differences in behavior on these two levels of "formality" may be interesting for many research purposes: it may be especially rewarding to observe the varying degrees of preparation before the final phase among different subjects: from individuals where the desire to let themselves be heard at once is paramount, to others who hold a hyper-anxious rehearsal before turning on. (e) As no hiding of the recording apparatus is necessary, the technical difficulties are diminished.

The first task consisted of four pictures to be connected into one story; for this purpose we used the cards of the Four-Picture Test (VAN LENNEP 1948, 1951). The other tasks all consisted of single pictures of the following content (cf. Figure 9.13): (a) *Working group.* A group of four children, two girls and two boys, assembled around a table, and doing different kinds of work. (b) *Boy at his desk.* A boy stands leaning against his desk with his school books under his arm and apparently musing on something. (c) *The older one and the younger one.* A boy is sitting on a chair and a somewhat older male individual — the interpretations "older brother" or "father" seem to be the obvious ones — is sitting on the edge of the table. (d) *Woman and boy.* A boy is sitting in his bed, while a woman — the interpretation "his mother" is fairly obvious — stands at his side. (e) *The party.* An informal situation: two boys stand in the background speaking to each other, at a table three girls and one boy are drinking something, perhaps lemonade, while a small girl is standing by herself in the foreground eating a piece of tart. (f) *Before the class.* One girl stands in front of the bar in the gymnasium, while four girls are standing behind, looking at her. (g) *Three in the street.* Three children are kneeling in the gutter. What they are doing cannot be discerned. (Possibilities of projective interpretation of these picture-stories should not be quite out of the question; attempts with projective interpretations of group stories have been made among adults by HENRY & GUETZKOW, 1951, and by HORWITZ & CARTWRIGHT, 1953, cf. also HENRY, 1951. In the present connection we will abstain from this kind of analysis and only look out for the "rotation phenomenon". However, we hope to be able to discuss other aspects of this test-situation in a later publication.)

The present analysis was made on eighteen groups: nine groups composed of High-Status individuals, and nine groups composed of Low-Status individuals.[9]

In Figure 9.14a we depict the task sequence when the "rotation prin-

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[9] The majority of these pupils (twelve groups) were the individuals in the *MF* part of Beta Basic. In order to add to the small number of groups, two groups used for pre-studies from grade level 4, and the four groups from the lowest grade level in the *AB* Classes were also included. The higher grade levels of the *AB* Classes were, on the other hand, not included here, because more extensive experience with group work could easily make the appearance of the rotation phenomenon depend on group work tradition in the classroom rather than on more spontaneous tendencies. . . . Of the eighteen groups, sixteen consisted of four pupils, two (from 6mf) consisted of three pupils.

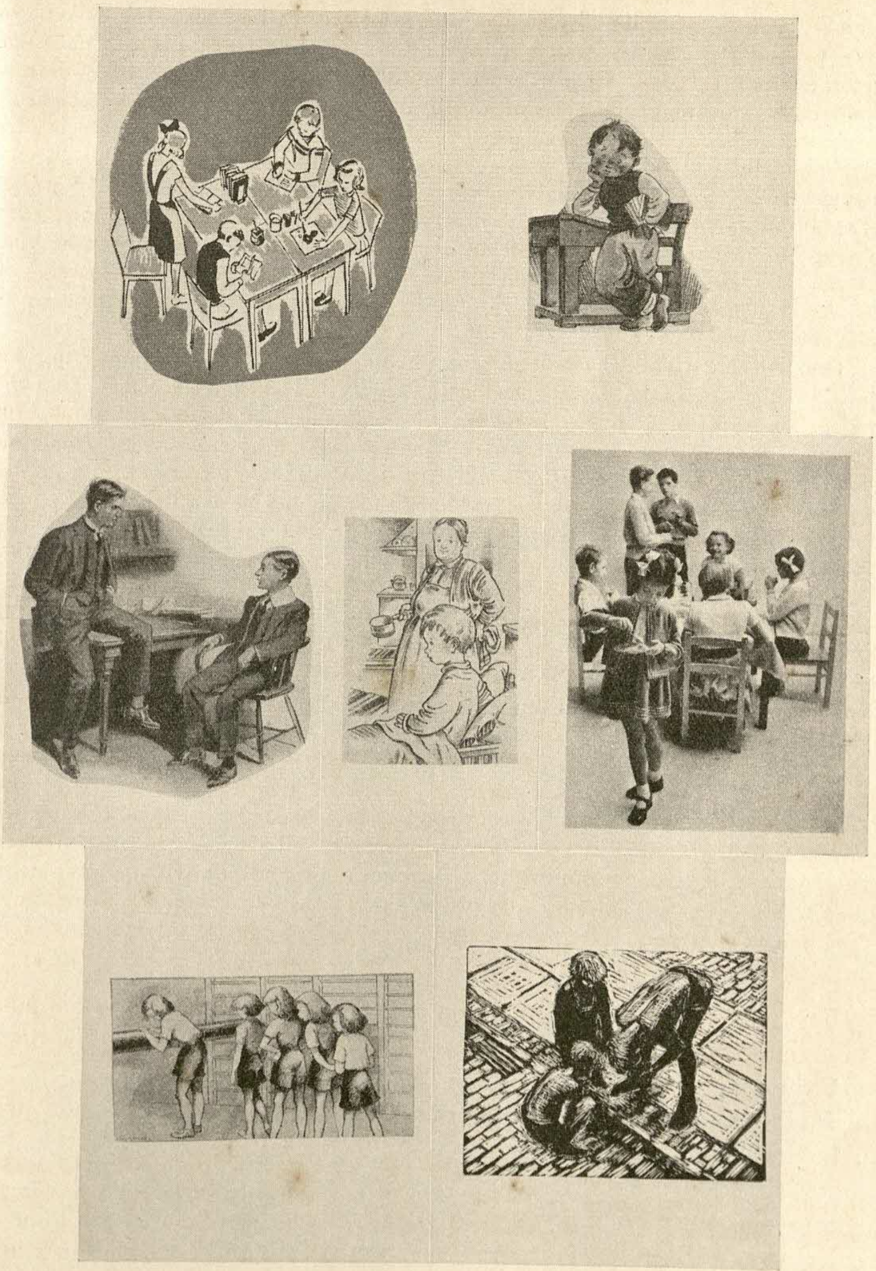


Fig. 9.13. The pictures used for story-telling.

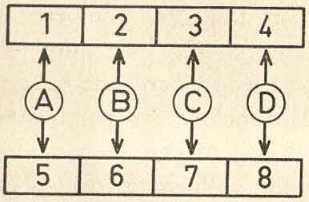
ciple" is strictly applied by the pupils. The sub-tasks are numbered from 1 to 8, and the children symbolized by lettered circles. The pupil telling the first story is placed below task 1 and is called *A* here, the next pupil making a contribution is called *B* and placed below the pertinent task number, etc. A strict "rotation" means then that if tasks 1, 2, 3, and 4 are performed by *A*, *B*, *C*, and *D* in turn, then task 5 "belongs to" *A*, task 6 to *B*, task 7 to *C*, and task 8 to *D*. This strict principle may be disturbed to a greater or lesser extent. In Figure 9.14 b we see a slightly uneven participation: *A* and *B* each tell three stories, *C* and *D* only one, and the strict sequence is disarranged. In Figure 9.14 c, finally, considerable disruption is seen: *C* and *D* tell no story at all, whereas the dominant *A* tells the first seven stories alone. The eighth story is told both by *A* and *B*: *B* begins to tell, but *A* interrupts him and continues the story.

Table 9.40 shows the number of groups where the rotation principle did and did not appear. In fact, as we expected, the High-Status groups most often show the "rotation phenomenon", whereas the Low-Status groups most often make deviations from this ordered sequence (the difference being significant, *P* .02). In the lower grades, the pupils as a rule were very eager to tell the stories in the microphone; telling a larger number of the stories than two, could then mean disregarding the wishes of the others. In some other cases, the pupils showed some resistance against talking in the microphone: a subject's trying to escape by postponing his turns could then mean that he was trying to avoid his share of the responsibilities. The "rotation phenomenon" admittedly does not offer itself entirely easily to general interpretation, but the possible connection with "interaction efficiency" and the differences shown in our — undeniably few — groups at least make us feel that this phenomenon is worth further study within differential social psychology.

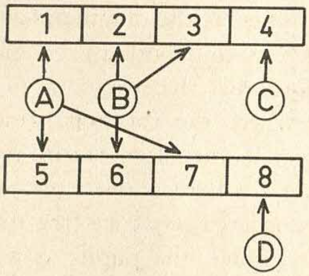
## C. *"The Item Estimation Task"*

In the Body Sway Situation above we found slight differences between the High-Status and the Low-Status children: the latter seemed more often to be influenced by the suggestions. In this case we dealt with adult suggestions of a fairly exceptional type. If we concentrate on peer suggestions of a more ordinary kind, do we find similar differences? Do we find that Low-Status children are more often influenced by the opinions of the group ("the others") than are High-Status children?

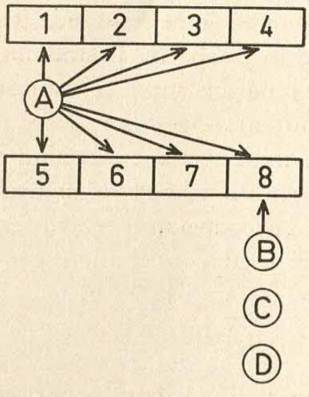
Experiments on the influence of the group on the judgment of single individuals have been made with different kinds of material: judgments



a. "Rotation Principle" strictly applied (High-Status group, grade 8)



b. "Rotation Principle" disturbed: Uneven participation (Low-Status group, grade 8)



c. "Rotation Principle" out of the question: One-member dominance (Low-Status group, grade 3)

Fig. 9.14. Cases of occurrence and non-occurrence of the "rotation phenomenon".

about the number of dots on a card (e. g., Münsterberg 1914, Sodhi 1953), judgment about "movement" in the autokinetic effect (Sherif 1935, 1936, 1937, Sherif & Harvey 1952; cf. also Sherif & Cantril 1947, p. 29 et seq.; Sherif 1948, p. 156 et seq.), judgments about complex drawings (e. g., Luchins 1945), or judgments about the length of lines (e. g., Berenda 1950). In many cases investigators have been more interested in showing

Table 9.40. The Rotation Phenomenon

| Kind of group | Number of groups with occurrence of the rotation phenomenon | Total number of groups | Percentage |
|---|---|---|---|
| High-Status | 7 | 9 | 78 |
| Low-Status | 1 | 9 | 11 |
| Both | 8 | 18 | 44 |

Table 9.41. The Item Estimation Task
(Beta Basic)

| Sex | Status category | Number of pupils changing estimate in the direction towards the group mean | Total number of pupils | Percentage of pupils changing estimate in the direction towards the group mean | *P* |
|---|---|---|---|---|---|
| M | H | 15 | 34 | 44 | .006 |
| | L | 27 | 34 | 79 | |
| F | H | 27 | 35 | 77 | .2 |
| | L | 21 | 35 | 60 | |
| M+F | H+L | 90 | 138 | 65 | |

that group influences exist than in demonstrating and explaining individual differences. However, some authors have described over-conformity as a mechanism of escape from anxiety and aloneness (cf., e. g., Fromm 1941, 1955), and, in fact, different experimental contributions seem to show that feelings of social inadequacy, shyness, and low self-esteem are more frequent among easily persuaded "over-conformers" than among individuals more difficult to persuade (cf., e. g., Adorno, Frenkel-Brunswik, Levinson, & Sanford 1950, Hoffman 1953, Hovland, Janis, & Kelley 1953).

In the present case we used the following simple procedure, which we may call the "Item Estimation Situation". A large sheet of paper with a great many (about 1100) letters type-written unsystematically all over its surface was given to one group member in turn. He was allowed to look at it for 30 seconds. After that he was to estimate silently the total number of letters (a very difficult task, of course), write it down on a piece of paper together with his name (without showing the other group-members what he wrote). When all group-members had made their estimates, I collected the folded papers and read the estimates aloud. Then the pupils were given the opportunity to "think the thing over once more" and write down silently a second estimate — the same number or a new one.

For each group the mean of the first estimates was calculated, and we then simply looked to see whether the second estimate of a group member had changed in the direction towards this mean. Table 9.41 gives the result. Among girls we find no significant differences between High-Status and Low-Status groups, but among boys the frequency of pupils eager to conform was significantly greater in the Low-Status groups than in the High-Status groups.

# SUMMARY AND CONCLUSIONS

## A. *Problem*

Several interpretative assumptions are often made implicitly when using the results from sociometric choice situations in schools. For instance, the sociometric choice status scores are often presupposed tacitly to be: (a) relatively unaffected by preference method; (b) relatively unaffected by choice aspect (criterion); (c) relatively constant over a period of time; (d) accompanied by the individual's awareness of his own relative sociopreferential situation; (e) correlated with measures of general "adjustment" and "efficiency" of the single individual; and (f) possible to interpret similarly in different countries. In very general terms, the purpose of the present studies is to discuss and test such interpretative assumptions concerning sociometric choice status, starting from the field of work where sociometric choice methods have probably been most easily utilized (elementary school), from a choice aspect of primary importance for its educational applications (selecting a workmate) and from a simple choice technique similar to the most generally employed devices.

The report consists of three main parts. In the *first part* general principles for collection and analysis of sociopreferential data are discussed. The *second part* contains the so called "Alfa Experiments", and the *third part* the so called "Beta Experiments". The former deals primarily with an internal analysis of sociopreferential variables from a broader sample of subjects; the latter focuses on a smaller sample of subjects representing extreme sociopreferential positions and compares the sociopreferential variables with a series of extra-sociopreferential variables.

## B. *Preparatory methodological discussion*

### a. *Definitions*

An introductory discussion on the definition and delimitation of "sociometry" is given in chap. 1. It is shown that the term "sociometry" is defined in very different ways by different authors. Thirteen definitions picked out from literature were rephrased and rearranged so that the conceptual interrelations should be as clear as possible (see p. 19 et seq.) and then sent to a sample of "experts" for consideration. An analysis of 131 answers received testified to the existing terminological confusion. However, it not only demonstrated the need for clarification, but also gave several ideas of ways to reach agreement. Several respondents felt a developmental trend away from limited and narrow definitions towards those less specific ones dealing with interhuman and interanimal relations in general; on the other hand, some of them were reluctant to lose a term for a distinctive area of work: the assessment of peer preferences. Considering this dilemma, we made the following decision for the language of the present report: The simple term "sociometry" is used in a broad meaning to refer to measurement of every kind of interhuman and interanimal relations, whereas the term "preferential sociometry" is used when we want to refer specifically to measurement of those interhuman and interanimal relations which can be described in terms of preferences ("attraction-neutrality-rejection in a choice situation").

### b. *Data collection*

General principles for collection of sociopreferential data by means of subject report methods are discussed in chap. 2. The instructions to the subjects are shown to consist primarily of a *definition of a specific preference situation*, as a rule containing the following items of information: (a) preference aspect defined (what kind of interaction setting), (b) preference effect defined (what practical outcomes if any?), (c) preference area defined (among what individuals?), (d) preference sign defined (which end of the preference scale: positive or negative choices?), (e) preference method defined (partial rank limited, partial rank unlimited, total rank, pair comparisons, etc.?), and (f) preference-motivation request defined (are the subjects requested to give choice motivations or not?). These different items were discussed in detail and in several cases methodological trends were analyzed from a sample of one hundred articles in "*Sociometry*". Among the methodological problems discussed in this chapter we may mention the following: the number and the specificity of preference aspects; effect methods *v.* no-effect methods of ensuring correspondence between choice wish and choice-wish report; *k*-choice requests *v.* unlimited choice; text interpretation *v.* context interpretation of choice motivations.

### c. *Data analysis*

General principles for analysis of sociopreferential data disclosed by means of subject report methods are discussed in chap. 3. The basic sociopreferential facts (*A* wants *B* as a workmate) have to undergo a process of combination and compression in order to be useful scientifically. The principal methods employed are discussed under three headings (verbal condensation, pictorial condensation, and numerical condensation) and evaluated pragmatically in their roles as "data-compressors" in relation to the "analysis-synthesis criterion" (are they sufficiently analytical, sufficiently synthetical, and sufficiently free from irrelevant influences?).

After a preliminary discussion of terminological "sub-purity" and "rigidity" of certain everyday expressions repeatedly found in sociopreferential research, a testproximal approach to a more precise sociopreferential language is outlined in close connection with the conventional technical vocabulary of relational logic. The present vocabulary covers simple sociopreferential relations, corresponding "socioperceptual" relations, "relational plurels", and "relational summaries". Evaluated from the principles mentioned above, it compares favorably with more conventional terminologies as to relevance (no irrelevant associations due to "sub-purity"), analysis (holding symbols for the basic preferential facts), and synthesis (being very flexible and short, thereby allowing us to grasp fairly easily intricate relations for which everyday language lacks terms).

In the discussion of the pictorial condensation it is pointed out that although diagrams depicting individual-individual relations only or relational summaries only are useful for many purposes, diagrams in which both individual-individual relations and relational summaries are depicted simultaneously, are especially useful, being more comprehensive and often less arbitrarily designed. In some cases it may be sufficient to use only one summary variable for the arrangement as in NORTHWAY's well-known target diagram; in other cases a multi-variable design is more useful. In these latter cases we propose the use of the so called "centripetal chess-board diagram" or some of its possible modifications (Figures 3.4 and 3.5), in which all the six basic sociopreferential variables of JENNINGS' choice-and-rejection patterns are dealt with simultaneously. For a multi-variable approach to stability research the "basic chess-board diagram" (Figure 3.3) should be useful.

In a final section of chap. 3 a few general considerations on the analysis of "specificity" are made. Among other things we discuss the usage of the term "reliability" within preferential sociometry and the concepts "spurious stability" and "spurious instability".

## C. *Subjects*

*The Alfa Experiments.* The main sample in the Alfa Experiments consisted of 867 children divided into 30 classes: five classes on each of the six Swedish grade levels 3 to 8 (roughly corresponding to the six age levels 9 to 14 years). This main sample may be subdivided into (a) the *M* Classes (six classes of boys only), (b) the *F* Classes (six classes of girls only), (c) the *MF* Classes (six mixed classes), and (d) the *AB* Classes (twelve additional mixed classes with more regular experience of group work). The term *Alfa Basic* is used to include the *M* Classes, the *F* Classes, and the *MF* Classes, and the term *Alfa Additional* is sometimes used as synonymous with the *AB* Classes. In addition to the main sample, certain extra classes (*Alfa Extra*) were used for special methodological problems. (A survey of the subjects in the Alfa Experiments is given in Table 4.1 and Table 4.2.)

*The Beta Experiments.* Our principal aim in the Beta Experiments was to pick out subjects with extreme sociopreferential status scores and compare them with respect to different kinds of behavior, examining whether the interpretations often made implicitly about extreme-status individuals in applied preferential sociometry were tenable. The main sample of subjects in the Beta Experiments (called *Beta Basic*) was composed of 136 pupils, taken from the *MF* Classes and the *AB* Classes. As a rule, eight pupils were chosen from each class according to the following principles: the two boys most often positively selected, the two girls most often positively selected, the two boys most often negatively selected, and the two girls most often negatively selected. Thus, Beta Basic may be subdivided into four sub-samples: one "high boy", one "high girl", one "low boy", and one "low girl" sample (*Hm*, *Hf*, *Lm*, and *Lf*). Applying a series of stricter criteria in selecting extreme-status individuals, we eliminated some of these individuals and thus obtained a specific sample, called *Beta Restricted.* In addition, all the pupils of a few ordinary school classes (*Beta Extra*) were given some of the tests used in the Beta Experiments. (For more detailed information of the pupil selection, cf. chap. 8.)

## D. *Test-situations*

*The Alfa Experiments.* The main questionnaires employed in the Alfa Experiments are described in chap. 4. In Questionnaire I the main preference situation is outlined: the pupils are instructed to choose co-workers for group work at school. In Questionnaire II the perspective is reversed: the subject is not asked to choose, but rather to guess how the others have chosen with respect to himself and which pupils received most choices. In Questionnaires III and IV one personal and one semi-personal choice aspect are added for purposes of comparison (friendship reports and choices of companions in the recess), and a series of questions are introduced to investigate similarities and differences between choice reports, "perception" reports, statements of usual interaction and statements of interaction at a specific time-point. — In a smaller number of classes other forms were used. These additional questionnaires were designed partly to investigate the importance of slight changes of phrasing in the ordinary simple choice method, and partly to compare a series of different preference methods (simple choice, pair comparisons, rank order, and different types of rating scales).

*The Beta Experiments.* The choice of extra-sociopreferential variables to be investigated was made according to a set of principles discussed in chap. 8. Most test-situations were chosen to make it possible to scrutinize assumptions of correlations between choice status and general "adjustment" and "efficiency"; some were of a more broadly explorative character. A survey is presented in Table 8.3, giving, among others, the following categories: (a) variables from the peer-report level of description, (b) variables from the teacher-report level of description, (c) variables from the self-report level of description, (d) experimenter-report level of description: variables from various general test-situations, and (e) experimenter-report level of description: variables from observation of behavior in group work situations.

## E. *Results*

### a. *Introductory presentation of the sociopreferential variables*

The six basic sociopreferential variables (positive choices made, positive choices received, positive choices reciprocated; negative choices made, negative choices received, negative choices reciprocated) are given an introductory presentation in chap. 5.

In connection with the discussion of positive choices received, a series of data is given showing the impropriety of employing arbitrary *k*-choice requests when wishing to make more absolute statements about "isolation", and certain categorical formulations about the "sociodynamic effect" are criticized. Applying Criswell's "index of integration", it is demonstrated that higher values are obtained in the mixed classes than in the non-mixed classes; it seems probable that this is due above all to the low number of intersexual preferences, causing a more constricted choice area in classes with both boys and girls. As it may seem puzzling to describe classes with conspicuous cleavage phenomena as especially "integrated", the index terminology is criticized as belonging to those sub-pure everyday expressions which may lead to confusion of operational definition and pre-operational usage. Choice concentration in the higher preference levels on specific individuals is especially low and the relative number of reciprocations especially high in the *AB* Classes; both conditions may be related to the fact that the pupils in these classes had more regular experience of group work and thus also had a greater chance to find out their reactions to each other. In classes where only a few possibilities for social contacts exist within school work, it is of course more probable that choices will be governed by general considerations about the chosen (and his "perceived", perhaps stereotyped, "attributes"), with choice concentration on certain individuals ("prestige centers") and lowered reciprocation as a consequence.

The degree of sex cleavage in the present investigations is important in all mixed classes. However, it is not absolute, and it tends to vary: (a) Directly with an increase in the degree of intimacy of the preference aspect: the lowest cleavage is found when using formalized aspects. (b) Directly with an increase in the degree of intensity of the positive choice: lower cleavage is found with low-level positive preferences than with high-level preferences. (c) Inversely with an increase in age: lower cleavage is found among the older children. (d) Inversely with an increase in contacts during school work: lower cleavage is found among the children with experience of group work. In addition, girls tend to be less resistant to intersexual contacts than boys.

### b. *The possibilities of primarily "homogeneous" interpretations*

The three first assumptions mentioned above deal with the "intra-sociopreferential specificity" of the choice status scores. To what degree are results from a specific choice situation — such as the one used here — limited to the method of preference (simple choice, unlimited in the upward direction), the choice aspect (choices of workmates), and, finally, to the specific test moment? Or, conversely, to what degree are "homogeneous" generalizations (testdistal "translations" or predictions within the sociopreferential field) possible and admissible?

*The specificity of the preference method.* The following five preference methods were used in two classes: (a) "*the method of simple choice*" unlimited in the upward direction; (b) "*the method of pair comparisons*"; (c) "*the method of total rank order*"; (d) "*rating-scale method I*", where the subjects were given lists of names followed by the ++ + ? — —— sequence; and (e) "*rating-scale method II*", also using a 5-step scale, but this time constructed like BOGARDUS' distance scale. Intercorrelations between status scores according to the five different methods indicate that although the correspondence between the different techniques is some way from being one-to-one, we nevertheless have no reason to assume that results gained with the primary technique employed in most of the present investigations will be fundamentally different from results reached with other methods. Pair comparison, rank order, and rating scale I seemed to be somewhat more closely interrelated to each other than they were to our main method, which may be due to different degrees of inclusiveness. However, even if the other methods mentioned can be recommended in certain respects, there are several reasons for not discarding the conventional simple choice method: this is usually felt to be more meaningful by the subjects, and it may also be used for other purposes (e. g., measuring the "expansivity" of the subjects).

Another methodological comparison which was made may also be mentioned in this connection. Using a standard score combination of the four additional methods mentioned (b—e) as a criterion variable, we compared sociopreferential status scores based on our unlimited choices and on different degrees of post-experimental limitation. It was seen that unlimited choices corresponded somewhat better with the criterion variable, but also that the differences between unlimited and moderately limited choice situations were very small, so that for many purposes such a limitation may be said to be a satisfactory approximation.

*The specificity of the preference aspect.* To what extent do we find similarities between different choice aspects, and to what extent do we find differences? The greater the similarities, the less aspect-bound the sociopreferential differentiation and the greater the possibility of generalization (translation, prediction). Avoiding details, we may summarize the results in two points: (a) Sociopreferential status seems to be relatively general at this age, so that workmate choices, playground companion choices, and friendship reports give similar status rankings, and thus it is not quite impossible to "translate" from one preference situation to another. (b) At the same time, we perceive a slight but interesting tendency towards greater differentiation among the older children so that such generalizations may be said to be somewhat less risky among the younger pupils than among the older ones.

*The specificity of the testing time.* In general we find a fair degree of stability in the number of positive workmate choices received even over relatively long periods of time, that is, during more than a year. For practical educational application, this means that the sociopreferential structure, to the extent that this is mirrored in the choice receptions of the pupils, is sufficiently consistent to give a sociopreferential exploration of the type utilized here a certain degree of diagnostic and prognostic value. On the other hand, we are still far enough from a one-to-one correspondence to find this structure at the same time sufficiently flexible to leave room for some educational optimism concerning the possibilities of influencing the social development of the pupils in a direction we consider favorable. However, we also find that the degree of consistency is very different for the six basic sociopreferential variables: the number of outgoing choices is usually considerably less consistent than the number of incoming choices, and the comparisons involving negative variables as a rule result in lower coefficients than comparisons involving the corresponding positive variables.

In cases where, from the specific test-moment, we can make predictions of changes to come, the specificity of the moment is diminished *in spite of* changes. Among the factors which are related to the degree of stability of outgoing choices, we may mention the following: (a) the time interval; (b) the preference level; (c) the incoming choices; and (d) the status of choice-maker and choice-receiver. — That we find lower consistency, the longer the time interval, seems fairly self-evident. — From the results, it is very clear also that a first choice is something dynamically different from and "more than" a second choice, a second choice is something different from and "more than" a third choice, etc. The fact that the probability of intertemporal change is greater, the lower the preference level, is one important reason for considering it correct to differentiate between different degrees of preferences in the analysis. — If an incoming choice is interpreted as a stability-inducing factor when it has the same sign as the outgoing choice, but as an instability-inducing factor when it has the opposite sign, predictions about the stability of different types of dyadic relations should be possible from very simple considerations. For instance, a rejection given a positive rejoinder should have a greater tendency to shift than a rejection given a negative reciprocation (which is shown to be the case). This type of stability hypothesis, starting from considerations of the total relational field, seems to be worth more attention within preferential sociometry than it has received so far. — It is seen that low-status children obtain higher stability percentages for their choices to high-status children, than do high-status children for their choices to low-status children, a fact probably related both to different "choice satisfaction" and to the unrealistic choosing of prestige-centers by some low-status pupils.

### c. *The possibilities of primarily "heterogeneous" interpretations*

Whereas the assumptions studied so far have dealt with the possibilities of generalizing or predicting within the sociopreferential area, the common assumptions of a correlation between high sociopreferential status on the one hand and general "adjustment" and "efficiency" of the individual on the other focus on the possibilities of making predictions of a more "heterogeneous" type. The assumption of the individual's awareness of his own sociopreferential position is of special interest in this connection, as such an awareness may be the fact which links the specific sociopreferential situation and the fact of more general "adjustment" in a meaningful and understandable pattern.

*Awareness of choice reception and choice status.* The guessing behavior of the pupils (guessing which classmates choose them) was found to vary according to at least the five following factors: (a) the preference level, (b) the preference sign, (c) the status of the individuals involved, (d) the co-being experience of the individuals involved, and (e) the sex of the individuals involved. To take only one example: When high-status pupils choose low-status pupils, they more often expect reciprocation than do low-status pupils when choosing high-status pupils. This may of course be rooted in the fact that the pupil has a certain awareness of his own status, and that — consequently — the high-status individual is more confident of being the center of positive choices than is the low-status individual. On the whole, the pupils have a fairly general knowledge of which pupils are most chosen, and at least a partial awareness of which classmates give choices to themselves.

Some information related to the question of whether the overrejected children *feel* rejected (in a wider sense) more often than do the overchosen may be derived from a self-report device such as the California Test of Personality, which was given to the subjects of Beta Basic. Although the character of non-objectivity is inherent in all self-report instruments, we cannot say that they are always without interest. On the contrary, when we deal with personal and social "adjustment", self-perception seems to be of direct interest in spite of or rather by virtue of its subjectivity. Do the Low-Status individuals "perceive" and describe themselves as dissatisfied? (Capital letters are used for status categories in the Beta

Experiments, small letters in the Alfa Experiments.) With respect to total test scores, we get very clear differences between the two categories in Beta Basic. Thus, there is not only a difference in "sociopreferential adjustment" in the very specific sense of being chosen ("accepted as companion"), but also a difference with respect to adjustment in the sense of subjectively experienced satisfaction, etc. ("subjective adjustment"). If we investigate which are the best differentiating items, we find that many of them directly refer to the "perception" of rejection.

*Interaction efficiency and work efficiency.* As emphasized above, "adjustment", in many of its uses, is intimately related to the concept of "efficiency": "adjustment" to a work situation or an interaction situation ("objective adjustment") involves, as a rule, "work efficiency" and "interaction efficiency". If choices and rejections can be regarded as the rewards and punishments that the group members bestow on the existence or absence of an ability to adjust to the demands of the group, it may be a reasonable hypothesis that the much chosen display socially more desirable behavior than the much rejected, that the latter to a lesser extent show good working and interaction efficiency.

Ratings by peers were made with a guess-who device centering around social positivity, extrovert social activity and work efficiency. The peer-description rating status (the number of positive mentions received) was found to correlate clearly with sociopreferential status, which confirms the view presented above that the choice situation is not too specific: the two modes of subjective rating are intimately related and may, for some purposes and for some individuals, be considered only as different aspects of a complex pal-evaluation totality. In addition, we found that High-Status children tended to be less sex-role determined in their positive ratings, that their "socioperceptual" selectivity was not so restricted to their own sex. — As a basis for general teacher rating, the HAGGERTY-OLSON-WICKMAN Behavior Rating Schedules were used. It was seen that the Low-Status pupils were described by the teachers as children with behavior problems and with such intellectual, physical, and emotional characteristics as are found among children with problem tendencies. Teacher-ratings of co-working variables showed differences in the expected directions, and, with respect to general and physical achievement according to teachers' marks, the Low-Status individuals were, as a rule, inferior. — Self-reports have already been mentioned. Parts of the *N* Questionnaire and the Junior Personality Quiz show differences of a similar kind. — Of course, both teachers, peers and the subjects themselves give subjective views; nevertheless, their descriptions confirm each other to a considerable extent.

In several respects the data from the more objective test-situations corroborate the self-rating and other-rating data both as to working efficiency and interaction efficiency. In intelligence tests (we used one American non-verbal and one Swedish verbal group test) we found in many cases a clear difference between the two extreme subject categories — the High-Status pupils having the better test results. The much chosen pupils showed some tendency towards lower perseveration in alternation tests and higher performance speed. Honesty being important in social interplay, a few simple situational tests of cheating and lying were used; the Low-Status individuals tended somewhat more often than the High-Status individuals to exhibit the undesirable behavior. The ability to admit errors instead of aggressively denying responsibility or even putting the blame on some other individual is of importance for efficient social interaction; in the ROSENZWEIG test, the Low-Status pupils seemed to lack this ability somewhat more often than did the High-Status individuals. The much chosen individuals tended to have a higher score on "adjustment" in the CATTELL-ANDERSON Music Preference Test, and showed some tendency towards less suggestibility in the Body Sway Test.

Observation of group work behavior in the classroom showed that negative attitudes towards the work, towards the co-workers, and towards one's own person were more frequent among the Low-Status children. There was some indication that these differences were not so clear among the older children as among the younger ones, which was also the case with respect to teachers' marks and intelligence tests. Of course, classroom observations are subject to many disturbing influences. In a few experimental small group situations ("miniature social situations") we tried to study the High-Status and the Low-Status pupils in more well-defined interaction situations. Differences with respect to working efficiency were seen ("The Complicated Exchange Task"), and a systematic division of labor ("the Rotation Phenomenon") was more often observed in High-Status groups, whereas the frequency of individuals eager to conform with group-members on an "Item Estimation Task" was higher in the Low-Status groups.

*

Among the common assumptions referred to in the introduction, we mentioned that it has been considered possible to interpret the sociometric status scores similarly in different countries. From this investigation we cannot, of course, make any general statements about this issue; that would, in fact, demand a detailed and comprehensive cross-cultural study. We have mentioned certain factors which may be thought to be easily influenced by different cultural "climates" (such as the interaspectual specificity, and the reaction towards rejection reports). Several of the results achieved in the present investigations have no correspondences in earlier investigations of sociometric choice data and cannot therefore be used for such intercultural comparisons. On the other hand, on those points where comparison is possible, our Swedish results show fundamental similarities with the Anglo-Saxon reports surveyed by LINDZEY & BORGATTA (1954), MOUTON, BLAKE, & FRUCHTER (1955 b), and J. G. THORPE (1955). This seems, at least, to be an indication of a *certain* intercultural translatability.

In our investigations we have found a fair amount of non-specificity with respect to methods, choice aspects, and test moments. In addition, a certain awareness of choice status received, and several clear extra-sociopreferential correlations with respect to specific aspects of "adjustment" and "efficiency" were noticeable. It is obvious that such facts add to our feeling that sociometric choice status scores are useful. On the other hand, many problems are as yet unsolved, and many difficult questions have only been touched upon very lightly in these investigations. Systematic cross-age and cross-cultural comparisons are important, and conceptual and methodological refinement both in the sociopreferential and in the extra-sociopreferential area are needed, before certain vague wholesale assumptions can be reduced to testable hypotheses. There is still much to be done.

*Appendix*

# A SHORT READER'S GUIDE

For the reader's convenience we list here the pages where we explain certain symbols and terms which are repeatedly used in the text. In addition, we give pages for a few figures and tables which are referred to in chapters other than those in which they are placed. Page numbers are given within brackets.

*Code-names*

pupils in the Alfa Experiments (154—155)
pupils in the Beta Experiments (285—287)

*Subject samples*

Alfa Basic, Alfa Additional, Alfa Extra (138—140)
Beta Basic, Beta Restricted, Beta Extra (284—285)
*AB*, *F*, *M*, *MF*, *Z*, *UV* Classes (138—140)
*H*, *L*, *Hm*, *Hf*, *Hr*, *Lm*, *Lf*, *Lr* Samples (284—285)

*Symbols for relational data*

basic individual-individual relations (79 et seq.)
"relational plurels" (85 et seq.)
"relational summaries" (93)

*Table keys*

sociomatrices (153 et seq., 229)
table headings in chap. 9 (302)

*Various terms*

basic chess-board diagram (106)
centripetal chess-board diagram (113)
dyadic motivation (265)
floor-limit technique (59)
formalized aspect (42)
*k*-choice request (56)
monadic motivation (265)
multi-variable macro-differentiation (91)
preference area (52)
preference sign (53)
quasi-space diagram (104)
relational plurel (85)

relational summary (92—93)
relatum time (231)
rotation phenomenon (366)
semi-personal aspect (42)
S-Sample from "*Sociometry*" (33)
testdistal level (70)
testproximal level (70)
UM (264)

*Figures:* 3.3 (107), 3.4 (114), 3.5 (116), 6.10 (240).

*Tables:* 2.3 (59), 3.3 (93), 3.4 (93), 4.1 (139), 4.2 (140), 5.1 (153), 5.16 (170), 5.25 (180), 8.1 (286), 8.2 (287), 8.3 (294).

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[1] As a rule, the abbreviations follow the code adopted by APA (cf. *Publication manual of the American Psychological Association*, 1952. Washington, D. C.: APA. Pp. 48—51). — References marked by an asterisk (*) belong to the so called "S-Sample" discussed in the First Part (p. 33 et seq.).

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## CORRIGENDA

Page 44, line 17, *for* CHAPPLE, *read* CHAPPLE & ARENSBERG
" 64, " 30, *for* CASSER, *read* GASSER
" 67, " 10, *for* 1947, *read* 1947 a
" 121, " 25, *for* 1947, *read* 1947 a
" 123, " 17, *for* EDWARDS 1949, *read* EDWARDS 1948
" 249, " 16, *for* SINGER, *read* E. SINGER
" 263, " 24, *for* 1947, *read* 1947 a
" 291, " 26, *for* 1944, *read* 1943
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